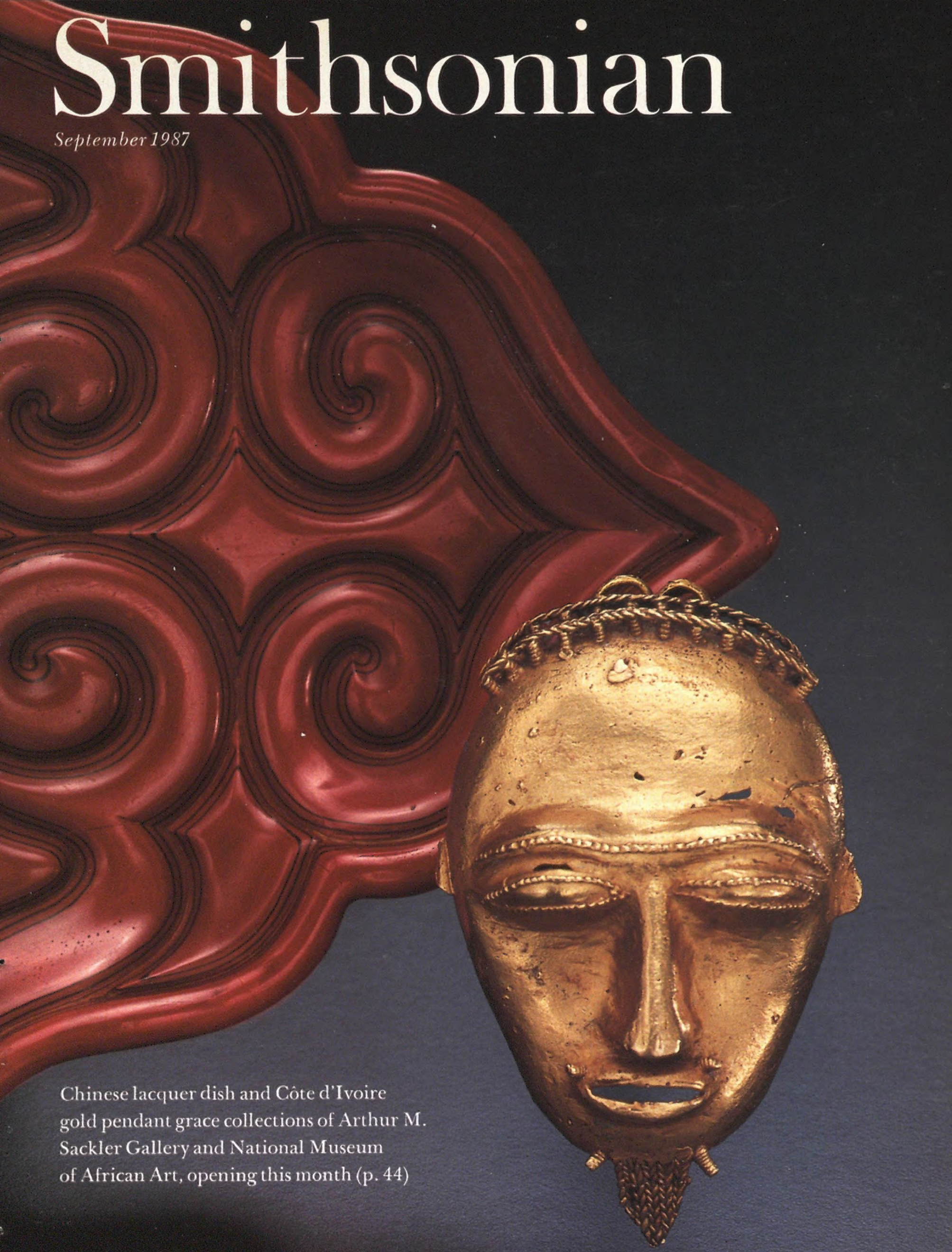
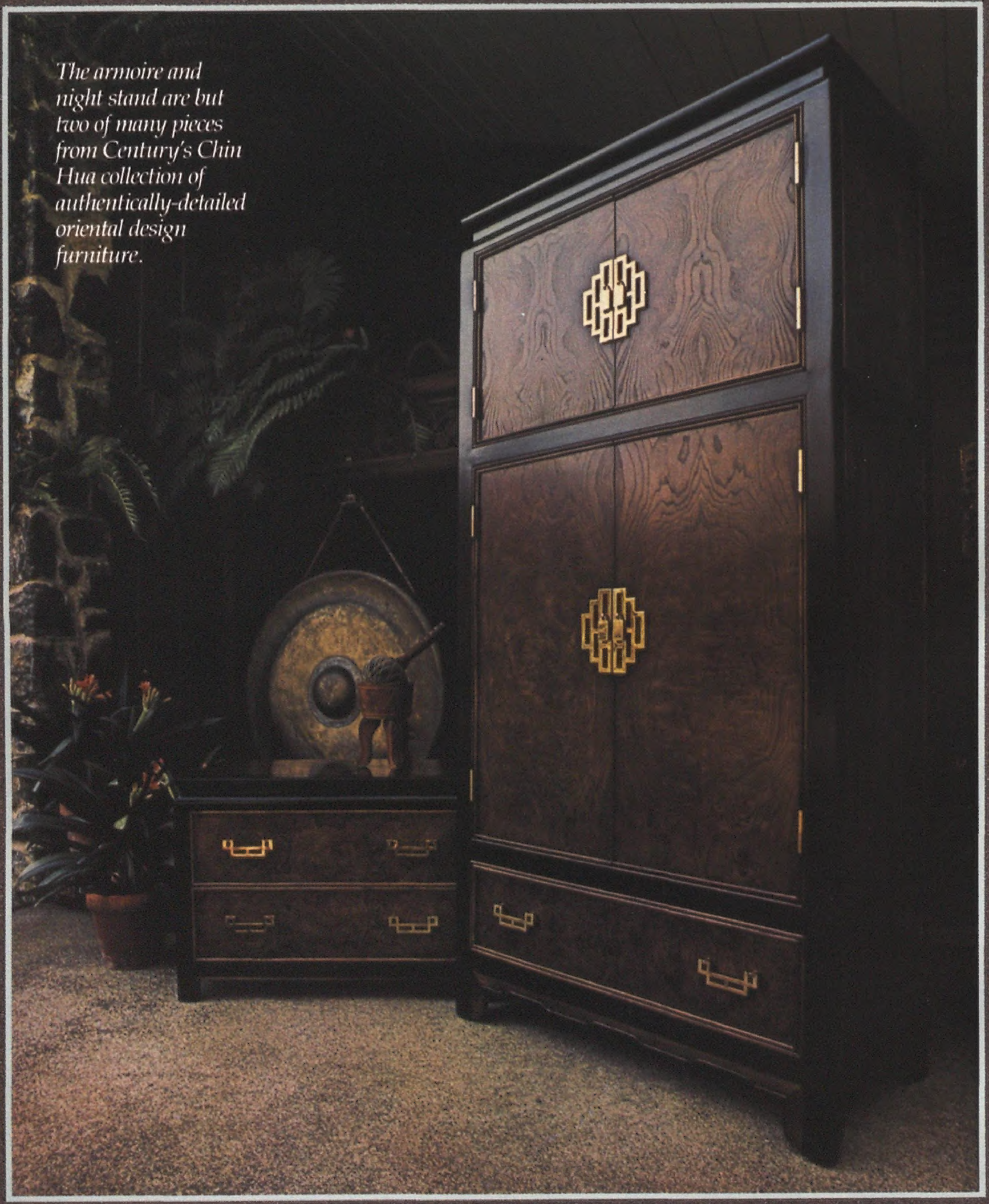
Smithsonian

September 1987



Chinese lacquer dish and Côte d'Ivoire gold pendant grace collections of Arthur M. Sackler Gallery and National Museum of African Art, opening this month (p. 44)

CENTURY



The armoire and night stand are but two of many pieces from Century's Chin Hua collection of authentically-detailed oriental design furniture.

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September 1987

Smithsonian

Volume 18, Number 6

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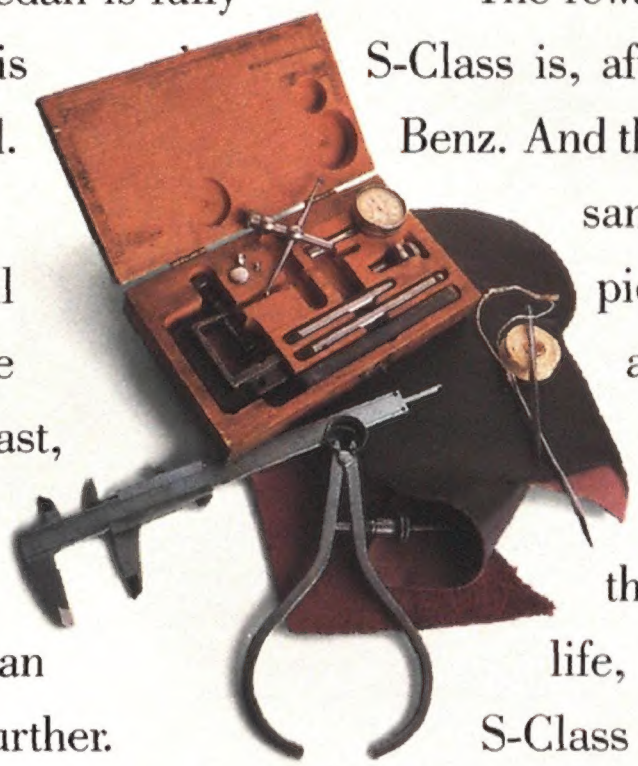

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The rewards continue–because the S-Class is, after all, built by Mercedes-Benz. And thus is welded, brazed, filed, sanded, polished and nit-picked to completion along an assembly route lined with enough inspections (and inspectors) to make this the most demanding trip of its life, if not any car's life. The S-Class aims not only for the glamour of high technology but also the reassurance of high technological reliability. And reflects almost fifty years of basic Mercedes-Benz safety research and engineering.

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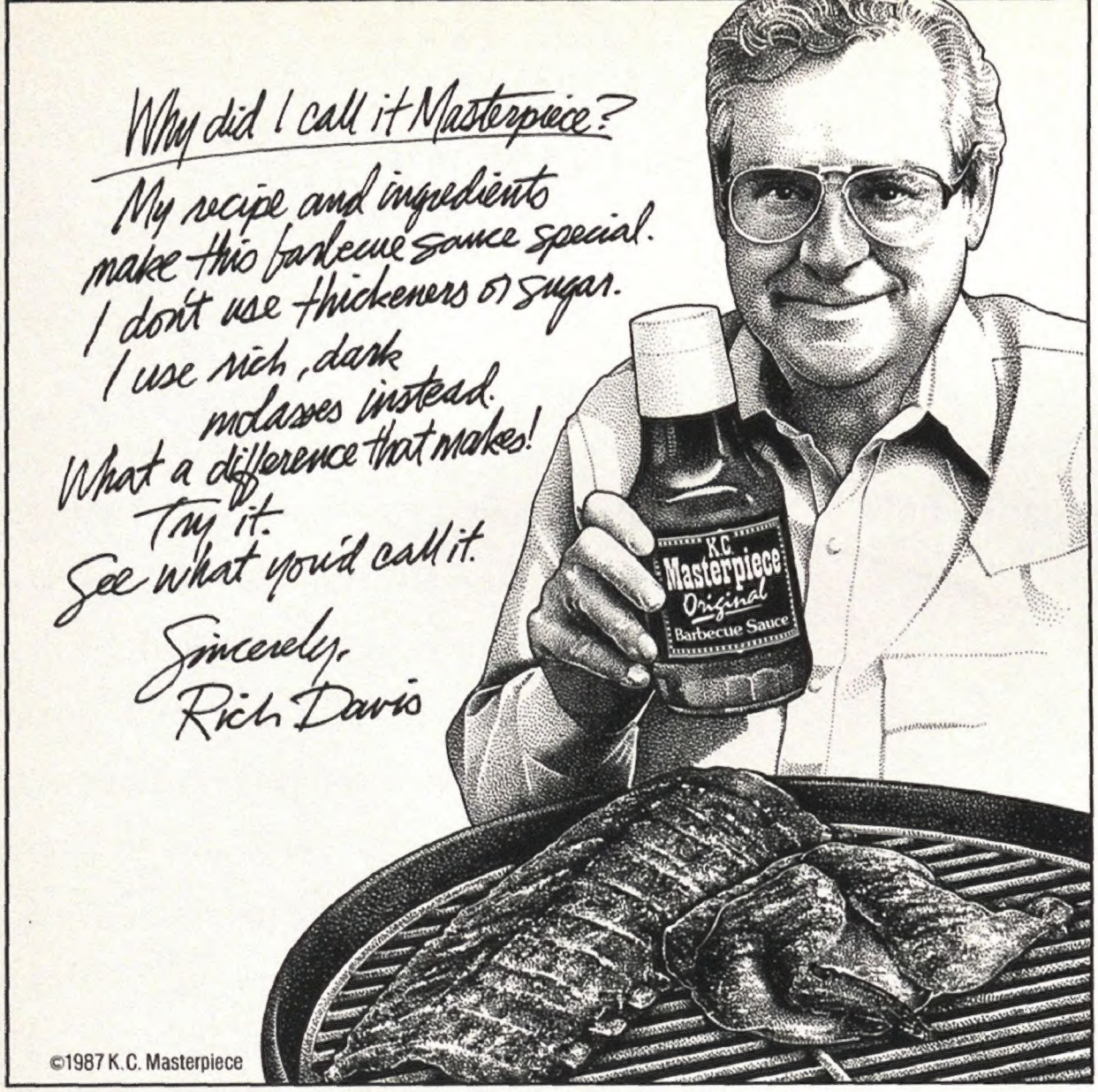

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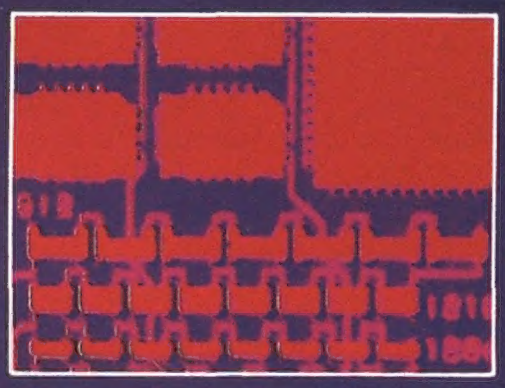

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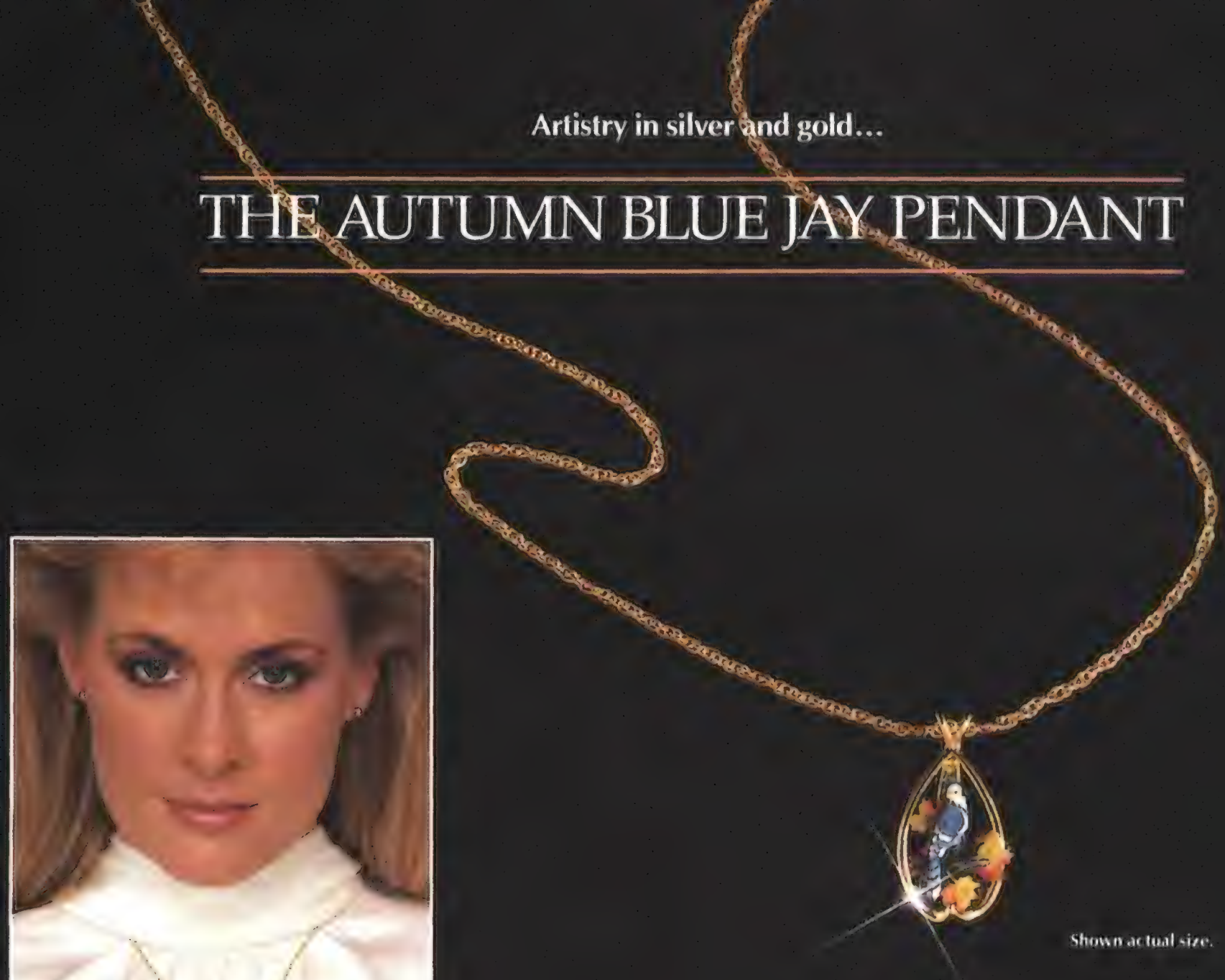

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Secretary Adams' comments

Smithsonian horizons

As an exterminating agency, humans are comparable with any natural form of violence that has ever come along

On our pinyon-shaded terrace on the western slope of the Rockies in Colorado are two bird feeders. One, a design patented to frustrate jays, at most times seems to have exclusively the jays' attentions; they are fearless, persistent, ingenious—at times even cooperating to solve a common problem—and on balance so poorly rewarded that they must enjoy the game for its own sake. The other is for hummingbirds, who are also inquisitive to the point of fearlessness, aggressively playful, brimming in the summer season with perhaps just the supplemental energy that we have provided for them.

By virtue of their feeding patterns and behavioral characteristics, here are two species that clearly have adapted to and profited from Man's presence. The space far above, in years past but no longer, was patrolled by a pair of golden eagles. Occupying a commanding position at the apex of the food chain in the wild, the great raptors are among the more vulnerable members of the class Aves when forced into coexistence with human predators. From the viewpoint of a particular species, these examples remind us that fitness is a moving target. Much of evolutionary success, or even survival, is a matter of accident.

Our surging population density and technological prowess doubtless make things worse, but this is a truly ancient, worldwide pattern. Helen James and Storrs Olson, on the staff of the Smithsonian's National Museum of Natural History, are participants in a study tracing extinctions within Hawaiian Island bird communities. Dates are based on new radiocarbon techniques that permit relatively less contaminated, hence more accurate, determinations from bone. From an excavated sample prior to the prehistoric arrival of Man they have determined that some 90 percent of identified bones "represent extinct species, mostly birds and a few bats," while afterward virtually all are "introduced species, mostly rodents."

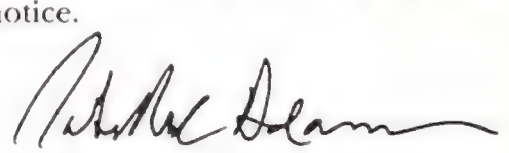
The implication they draw is of very high rates of extinction in isolated island ecosystems, coinciding with the earliest arrival of mankind. Without wholly discounting a climatic or geological contribution to these events, they assign the main responsibility to "some combination of human-related predation, habitat alteration, or introduced pathogens, predators or herbivores." Since most oceanic islands remain paleontologically unexplored, James and Olson are led to the conclusion that the "species richness of birds before the spread of *Homo sapiens* in Oceania must have been much greater than current estimates of slightly more than 9,000 avian species in the world."

Of course, the entire class Aves is in a much longer-range sense the survivor of a comparably catastrophic extinction process. *Archaeopteryx*, best known from fossil finds in Bavaria that are about 150 million years old, is an almost classic primitive form of bird, having wings, feathers and, also like birds, an independent bipedal system of terrestrial locomotion. Whether it merely glided or was capable of sustained flight is still a matter of vigorous dispute. Equally in dispute, and perhaps beyond hope of unambiguous determination, are the related questions of how *Archaeopteryx* evolved the capabilities of flight and whether it took off at a run, or dropped down from elevations in trees or on cliffs that it had to climb.

In any case, an overwhelming number of features attest that the reptilian derivation of *Archaeopteryx* is not in doubt. Since it was coterminous with the age of dinosaurs, some authorities maintain that its progressively more birdlike descendants were the only members of the dinosaur lineage to survive the massive extinction at the end of the Cretaceous period some 70 million years ago (*Horizons*, February 1987). "Birds are living dinosaurs," one of them concludes, "and as such they have extended the preeminence of Dinosauria among terrestrial vertebrates from the late Triassic to the present day."

We humans are, in all likelihood, at least comparable as an exterminating agency with any natural form of violence that has ever come along. Yet our destructiveness probably results, to a large extent, from the indirect consequences of organisms we depend on, or have at least carried around the world with us and learned to tolerate. Screened from the disappearing wild world by increasingly intimate interactions with fortunate adapters like the hummers and jays, we take comfort that our impact has been so indirect.

We must also acknowledge, however, ethical and esthetic sensibilities as well as prodigious scientific, technical and economic capacities that have come down to us. In that light, there can be little pride in the fact that the damage we do is for the most part focused rather than wholly obliterative, heedless rather than planned, and too often beyond the narrow boundaries of our care or even our notice.



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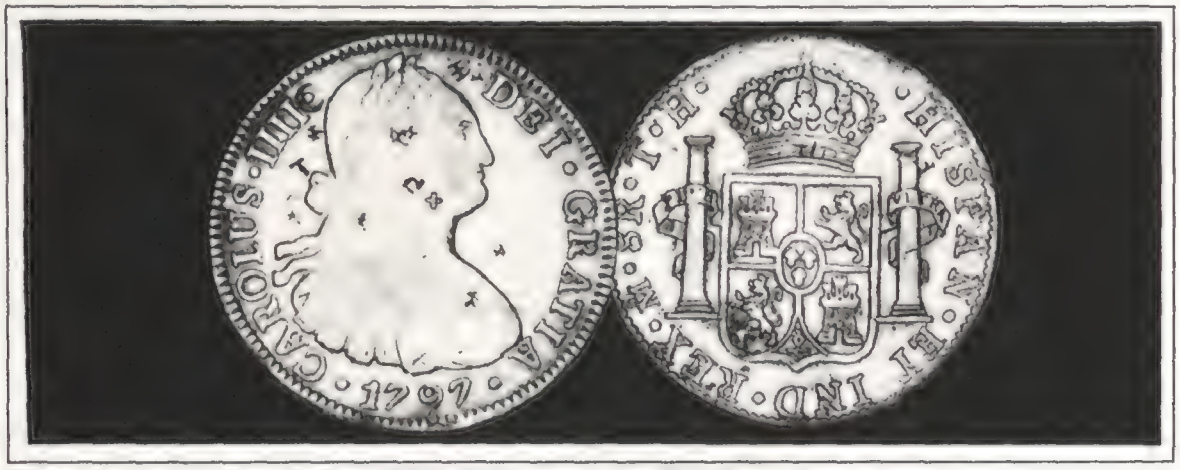

These historic silver dollars (1772-1821) were our 13 colonies' most popular.

Sept., 1987 MONTPELIER, VT International Coins & Currency, Inc. a national distributor of numismatic coins, is offering for sale a limited number of original coins up to 200 years old — among the first large silver dollars minted in the Americas. These magnificent silver coins once circulated in our original 13 colonies. Because of their high silver content and popularity, Thomas Jefferson recommended that they become official legal tender of the United States.

Minted from 1772-1821, these silver dollars were the most popular coins of our 13 colonies and were used as legal tender in the USA up until 1857. As collectors turn to American coin classics, these scarce silver dollars are increasingly sought-after.

Struck at the Americas' oldest mint in Mexico City and denominated 8 Reales, these silver dollars were the forerunners of the first U.S. silver dollar minted in 1794 — and served as the most favored trade coin in the world. Yet huge silver melts and the fact that relatively few were saved from destruction make these coins "sleeping" classics. Each silver dollar is a big 39.5 mm in diameter, contains 27.07 grams of .903 pure silver, and each comes with a Certificate of Authenticity attesting to its fine quality and genuine status. Because the supply was originally discovered in the Far East, genuine "Chinese merchant markings" are often visible and serve to authenticate the coins.

Because of the age and historical significance of these coins, you might expect to pay up to several hundred dollars for one. But while supplies last, they are available on a first-come, first-served basis to collectors at: (*#7144A*)

1 coin $75; 2 coins $150;
3 coins $215 (save $10);
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Letters to the Editor

The Constitution

Dear Sir: Your article in the July issue aroused my curiosity in saying "slavery was still legally practiced in all but one of the sovereign states; the obnoxious slave trade itself had been outlawed, or sharply discouraged, by only seven."

Which was the one state that had no slavery and which were the seven that outlawed or discouraged it?

Ralph A. Brooks
New York City

In the first article of its 1780 constitution—"All men are born free and equal"—Massachusetts abolished slavery. Those that discouraged the slave trade were Connecticut, Delaware, Virginia, Maryland, and North and South Carolina, in addition to Massachusetts. Ed.

Dear Sir: If illustrator William Bramhall's intention was to belittle our Founding Fathers, he succeeded remarkably; his propensity for putting a giant head on a tiny body degrades them.

In this critical year of anniversary we must be careful to preserve this sacred document, our Constitution—which has given us individual freedom and liberty for almost 200 years and has served as a model for new nations worldwide wanting liberty for their people—as well as the dignity of those who framed it.

India Woodbury
Ogunquit, Maine

Dear Sir: I must point out that after the Convention had struggled for several weeks and was about to adjourn in confusion, Benjamin Franklin admonished the delegates of the need for Divine and Providential guidance: ". . . the longer I live, the more convincing proofs I see of this truth: God governs in the affairs of

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man. . . . I therefore beg leave to move that, henceforth, prayer imploring the assistance of Heaven and its blessing on our deliberation be held in this assembly every morning."
Rev. Paul T. Edgar
Somersworth, New Hampshire
Franklin did plead for a daily prayer, but delegates could not agree that it was either wise or necessary. Finally, one member said the Convention had no money to hire a preacher, and that was the end of it. Ed.

The honeyed hobby

Dear Sir: I understand that, prior to the coming of the Europeans, the region that is now Mexico had—as it has to this day—black stingless bees that produce wild honey, although nowhere near so copiously as does the honeybee. And I'd guess that the American indigenes called the honeybees "white man's flies" not on account of their unfamiliarity, but because of their stings. The natives had, God knows, already got painfully stung by the white man themselves.
Gary Jennings
Lexington, Virginia
There were solitary bees—so called because they did not swarm—in the Western Hemisphere before the coming of the honeybees. As for "white man's flies," Mr. Jennings has a point—but they were so known because native Americans identified their tendency to swarm with the white man. Ed.

Dear Sir: It was the Smithsonian Institution that got me started in beekeeping.

In 1975, wandering through the dim recesses of the National Museum of Natural History, I became conscious of movement at my side. Son of a gun! It was an active beehive made of Plexiglas, with plastic tubes running from the hives out to Constitution Avenue. And the little insects were diligently buzzing back and forth, making their daily rounds.

I got a book on bees, ordered a hive from a mail-order house and started. There have been hives behind the house ever since.

Currently we have five on a hillside in the center of town. The bees are more of an interesting hobby than anything else. We get about seven gallons of honey per hive each year, but leave a large supply for the bees. They are able to care adequately for themselves should we be away for any period of time.

And it is entrancing just to sit and watch them work.
Hugh Cassidy
San Rafael, California

Dear Sir: Ron Fischer's three jars of prize-winning honey that were auctioned for $600 at the Illinois State Fair were bought by my son, Mark, in memory of his grandfather, Carl Killion, who was instrumental in having the U.S. Postal Service issue a commemorative embossed envelope honoring the honeybee. And it was I who had the honor of exposing Mr. Fischer to the fascinating hobby of beekeeping.
Eugene Killion
Extension Specialist in Apiculture
State of Illinois
Paris, Illinois

Dear Sir: I forced myself to read Jim Doherty's article despite the shame I still feel for having used an insecticide spray to destroy a bee colony ten years ago.

I had always timed my apple spraying to avoid harming bees, but these settled

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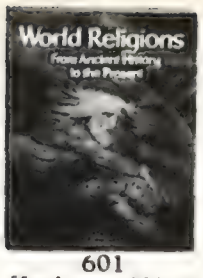

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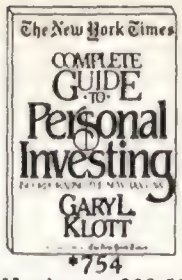

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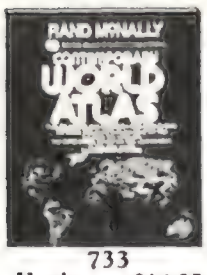

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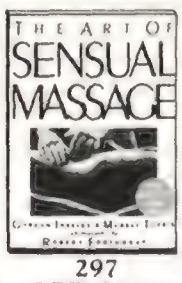

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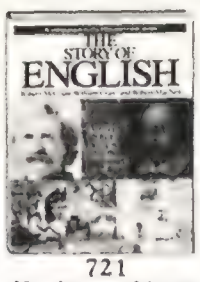

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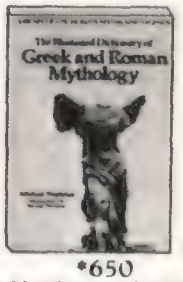

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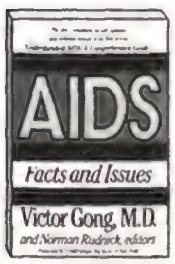

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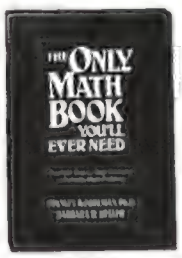

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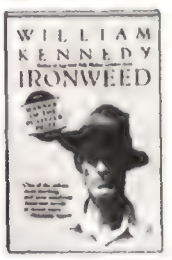

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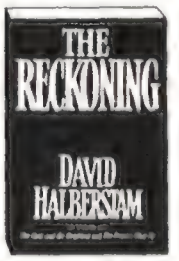

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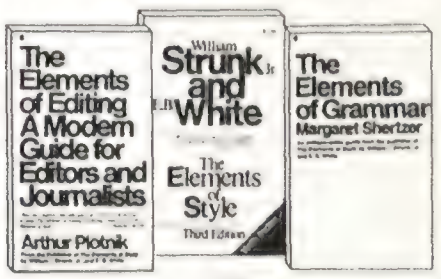

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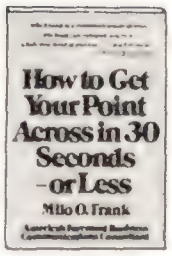

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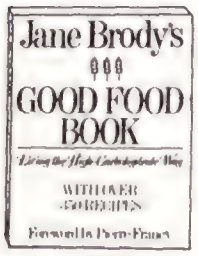

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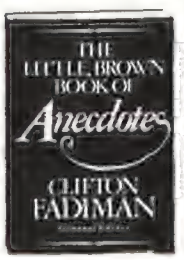

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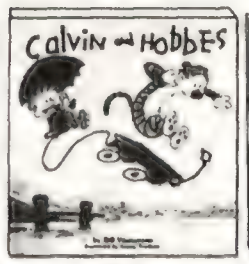

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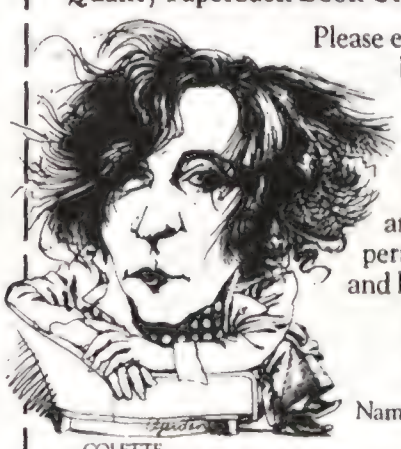

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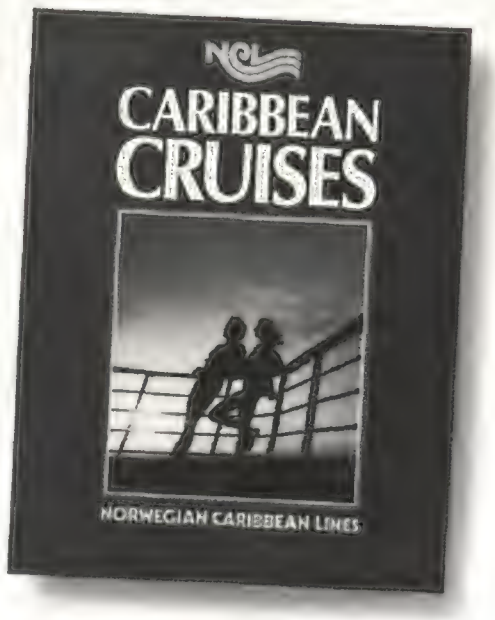

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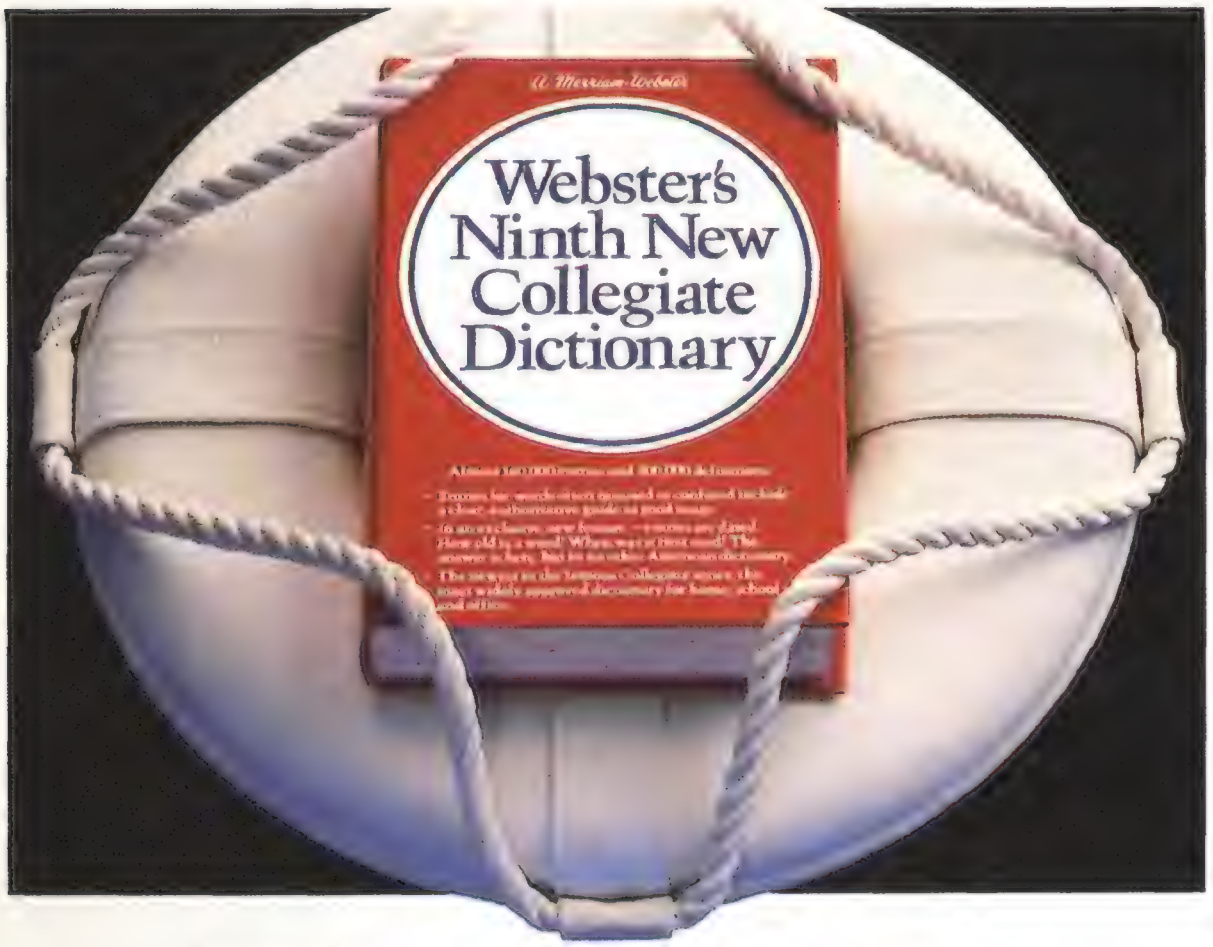

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in my compost pile next to the garbage can. I was afraid of them. My spray stirred up a seething mass of bees; squad after squad counterattacked, futilely flying into my spray.

The bees finally gave up. As on signal, the survivors arose and headed west, leaving me to contemplate my guilt.

The two trees have not yielded a decent apple since.

Edwin A. Rogers
Alexandria, Virginia

Dear Sir: Allow me to think like a human being for a few minutes. During my 50 years as a beekeeper I faced a society of hardworking females that kicked the males out the front door each fall and let them perish in the cold. Seeing more and more women enter the labor market, I am worried about the future of the human male.

John H. Meursinge
Yorba Linda, California

John La Farge

Dear Sir: Your article inspired me and lifted the depression I'd been going through. I got my paints out of the closet for the first time in ten years and started letting my imagination work on canvas.

Ms. Cookie Cohen
Exton, Pennsylvania

Dover Publications

Dear Sir: As Varick Street is mentioned four times in your article, your readers might be as amused as was I when I found out for whom the street had been named.

When my office announced its intention to move to Varick Street I did some research and learned that Col. Richard Varick had been an aide to Benedict Arnold. However, he was exonerated of any complicity in Arnold's treasonous acts. General Washington appointed him keeper of the Continental Army records, and he later went on to become not only a leading merchant but the Mayor of New York.

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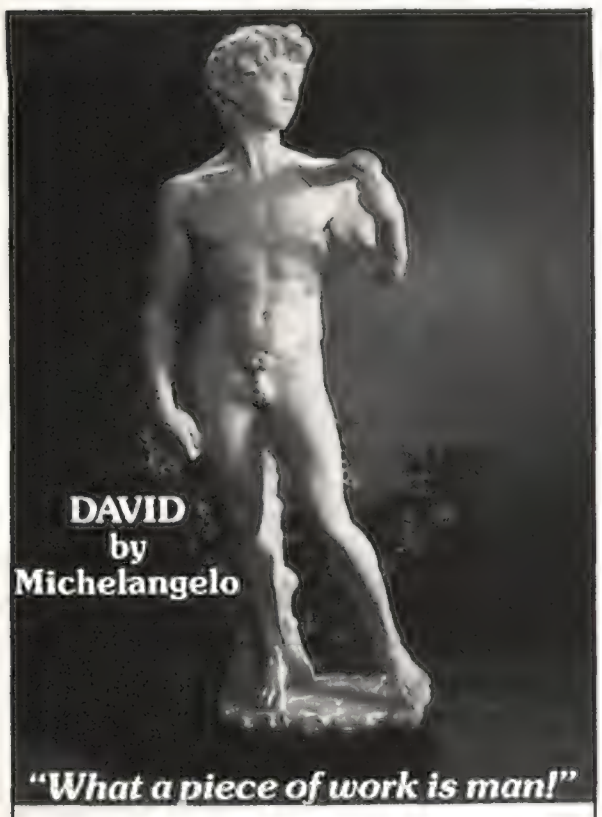

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No. 7, another Mayor of New York and the subject of a popular musical comedy, the feisty Fiorello H. La Guardia, was born in 1882.
Louis Blumengarten
Brooklyn

Dear Sir: My favorite book since childhood has been *the bear that wasn't* by Frank Tashlin, which was first published in 1946 by E. P. Dutton.

About ten years ago I decided that its theme of "to thine own self be true" and its wonderful line drawings were as appropriate today as they were originally, but I despaired of locating the book. I was overjoyed to find that Dover still prints it.
Lilith
San Francisco

Gondolas

Dear Sir: Once upon a time, Albuquerque opened a new park and zoo, of which the mayor was extremely proud. A visiting dignitary remarked that everything was just beautiful—but lacked gondolas. The mayor asked what they cost. When told, he reflected for a moment and replied, "Send us two and we'll breed them."
Bill Tate
Santa Fe

Pitt Rivers Museum

Dear Sir: In your article, a nail-studded wooden figure from Zaire is described as "a nail fetish" in which "each nail represents a villager's malicious wish."

This nail fetish sounds like the oath-taking and healing images—*nkisi n'kondi*—from Kongo culture described by R. F. Thompson and J. Cornet in *The Four Moments of the Sun*, published by the National Gallery of Art.

To so describe these figures misses much of their significance and richness. They would seem rather more akin to our legal contracts and suit resolutions, with a dash of prophylactic medicine thrown in.
D. W. Ingersoll jr.
Associate Professor of Anthropology
St. Mary's College of Maryland
St. Mary's City
According to Dr. Schuyler Jones, curator of the Pitt Rivers Museum, "Professor Ingersoll is correct in assuming that 'nail fetish' is intended to describe an oath-taking and healing image from the Kongo. The one in question was called mavungu *by Mary Kingsley,*

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who obtained it in Nganzi, KaKongo, near the mouth of the Kongo River. Regrettably, it is not possible to go into considerable detail on a museum label or in an article the length of SMITHSONIAN*'s.*" Ed.

Chess

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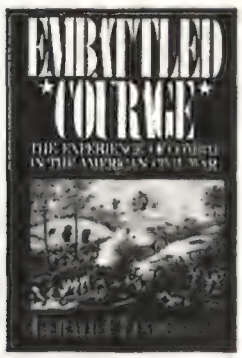

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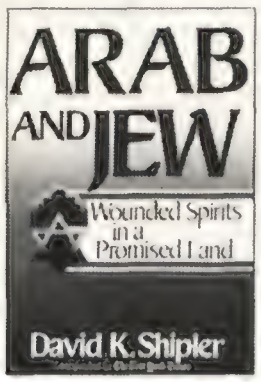

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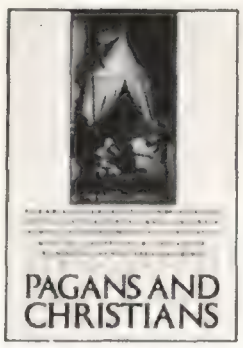

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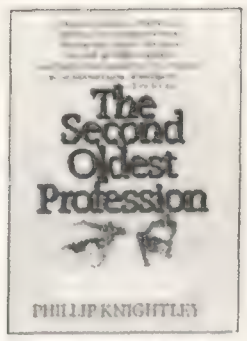

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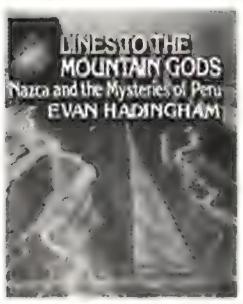

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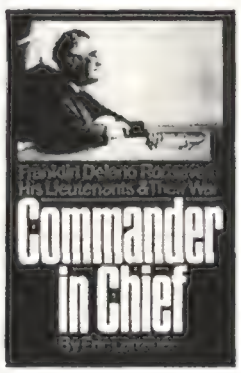

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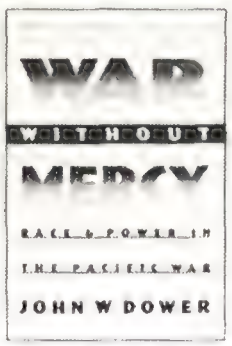

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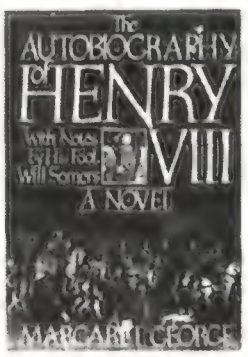

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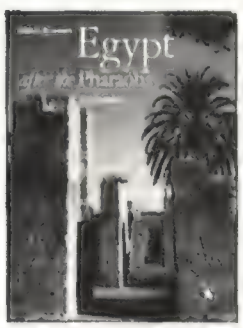

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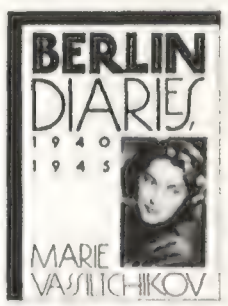

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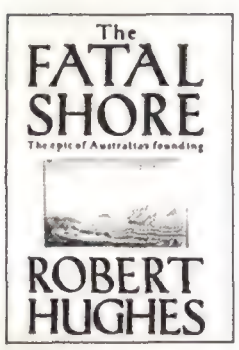

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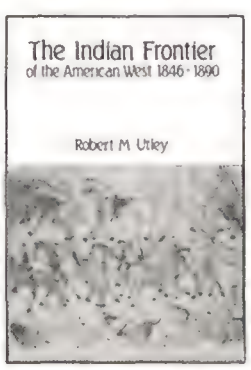

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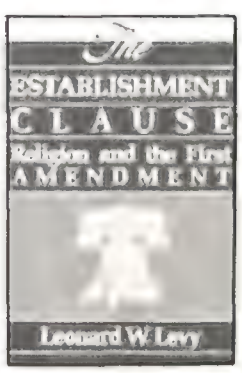

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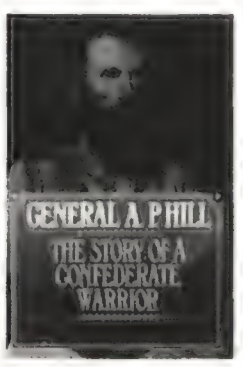

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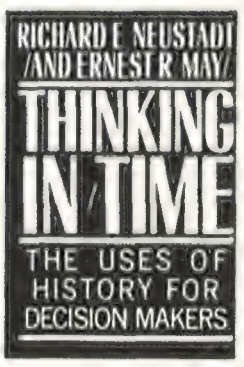

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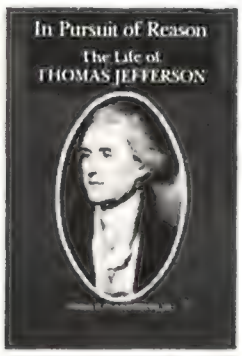

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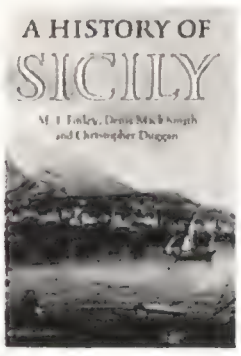

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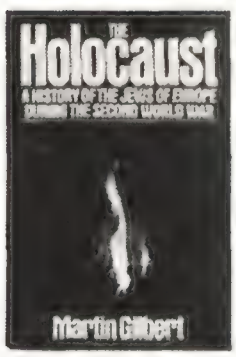

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Around the Mall and beyond

The film seems straight from Walt Disney Productions. The camera zooms in on a twig where a small bug is purposefully plodding in one direction and a big, awkward katydid is wandering irresolutely the other way. There isn't room to pass on the twig. Something's got to give.

Not the bug. It doesn't even slow down. It just keeps shuffling along, thoughts focused, eyes on a point, a symbol of stubborn determination. And the katydid, obviously devoid of any firm plans, tries to scramble out of the way, loses its footing and swings upside down beneath the twig. Without breaking stride, the bug trudges right over the katydid, stepping on its clinging toes, and presses on to whatever entomological destination calls it so imperiously. The katydid hauls itself back on top of the twig, and then, in a delicious moment, turns and, for a long second, looks back at the bug, by now almost at the end of the twig.

Watching the film, you instinctively expect a word or two of anthropomorphism from the commentator. Who could resist it? Kjell Sandved could. As I watched the scene develop, his low-key, persuasive Norwegian voice fell silent, and he let the picture do the talking. He was putting on his film *Curious Creatures and Minimonsters (Beyond the Ocean, Beneath the Leaf* when he narrates it for an adult audience) for a group of school kids at the Museum of Natural History, where anthropomorphism is about as popular as a Toyota in Detroit. Since 1964, Sandved has been a photographer for that museum, and he's enthusiastic about keeping his job.

Kjell (pronounced Shell) is enthusiastic about almost everything. Especially,

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Sandved hoists underwater time-lapse film equipment on Carrie Bow Cay.

he savors wonderful moments in nature that he feels beg for his cameras. I recall a Smithsonian outreach visit to Alaska during which Kjell ran a photography workshop. He had a demanding program, filled with group projects and critiques ("Yust remember, shorter exposure time and higher film speed help avoid blurred motion . . ."), but he found time to arrange a dawn flight over Mount McKinley to photograph the rising sun touching the snow. He made friends with a bush pilot and got his gear ready—but the weather failed him. Kjell couldn't talk it into cooperating. Undaunted, he took advantage of the dramatic clouds to take soft, "poetic" shots of the peak instead.

Kjell combines great ideas with a ready application of high pressure that few people can resist. He'll meet you crossing the Mall and buttonhole you, and you know from the gleam in that blue, Scandinavian eye that you're about to get the hard word.

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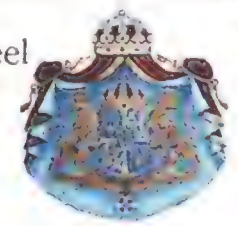

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and then brightens as he spots another old friend ripe for recruitment.

He has old friends everywhere. Walk down a street with him in Anchorage, or Tokyo, or Oslo, or Des Moines, and someone is sure to wave and shout "Hi, Kjell!" And then you hear that perfectly sincere response: "Hello! My old friend so-and-so!" The tanned, youthful face lights with pleasure. And after a moment, the eyes glisten with sudden inspiration. "I was thinking about you. I want you to come with me to Antarctica to try out a device I have just made for taking pictures in very cold temperatures . . ."

For years Kjell has been making just such trips and taking some of the world's most extraordinary photographs—often thanks to his ingenious, homemade devices. His films have been seen around the world. And children everywhere know the posters of Sandved subjects, from penguins dashing into the sea with the abandoned joy of weekenders at a beach resort, to a close-up of the fierce, fur-fringed face of a jumping spider with bared mandibles, to a small early-spring bud, just beginning to green, on the twig of a European ash.

Sandved, who says he is exactly 39, was born quite a few years ago on the shores of Hardanger Fjord, which I find lies east of Bergen. Kjell says it's one of Norway's most beautiful fjords, "narrow and steep, and with waterfalls, and even warm enough to grow grapes."

His father, a district physician, died when the boy was only 4, youngest of three brothers and one sister. Their mother remarried and they moved to Oslo Fjord, about 30 miles from the capital. Kjell remembers watching ships gliding past the living-room windows.

In Oslo he studied engineering, among other things, and mastered six languages. To help with expenses he began selling encyclopedias, and found he was good at it (which doesn't surprise me). So good, in fact, that he produced a specialized encyclopedia of his own on music. "I'm not particularly musical," he says, "but my mother was." He also determined that the covers of the first edition would be thin slabs of mahogany veneer.

In his cluttered office at the Museum of Natural History, Kjell produced this first baby, beautifully bound between those rich front and back covers. *Musikkens Verden*, it says; and under that, *Familie Musikkbok*. (Norwegian isn't so hard after all.) *The World of Music* or *Music Book for the Family* is fine to hold. The mahogany adds delight.

The encyclopedia was a smash hit and went into 12 overseas editions. Kjell followed it with *Kunstens Verden*, an encyclopedia of art, and found himself, still in his 30s, a successful publisher. He traveled through Europe and there developed a love for museums.

"I wanted to do an encyclopedia of animals," Kjell told me, "and I realized I would have to come to the United States and, above all, visit the Smithsonian." He did what he said—he generally does—and when he entered the Museum of Natural History, he knew that was where he wanted to be. Forever. "I sent my return ticket back to my stepfather, who was working in the publishing company."

He signed on as a Smithsonian volunteer. Learning of the need for a new photographic record (for documenting animal behavior in nature), he taught himself photography and went to Hawaii with an invertebrate zoologist to re-

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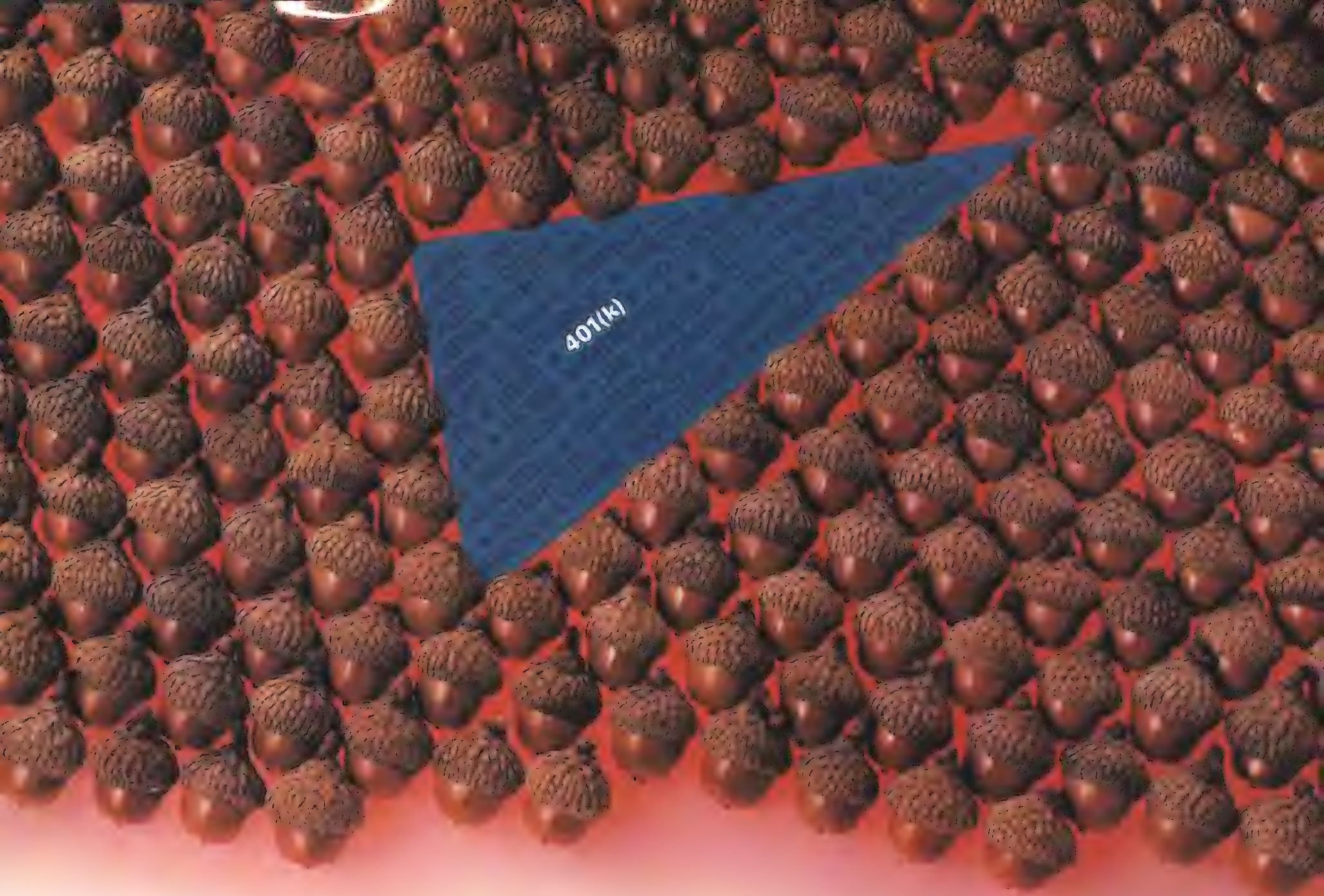

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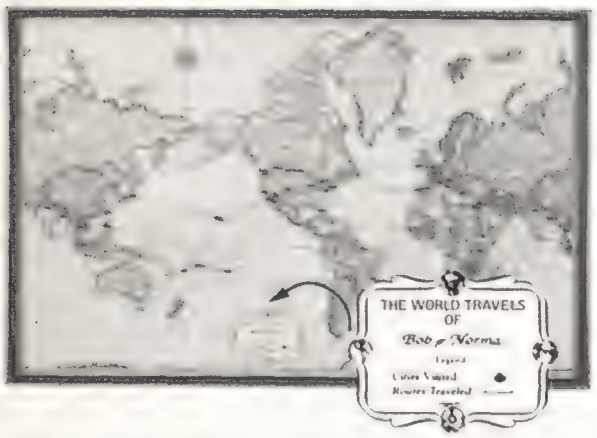

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cord sea creatures so that the museum model makers could fashion their likenesses for displays. He says his first pictures were terrible—reflections of his own face cropped up in shots through aquariums or onto glass slides—but he devised shields and lighting tricks and began to improve. Patience, hard work and creativity—mechanical as well as artistic—paid off.

To accurately record growth processes or behavior sequences in marine life, you often need time-lapse photography. Kjell worked out an electric motor that would expose one frame a minute and photographed symbiotic relationships between sponges and starfish with Porter Kier, then director of the museum.

Photographing fish in an aquarium can be frustrating because they often dart rapidly away from the camera. So Kjell built a rotating platform driven by a long shaft from an electric motor on the surface. He epoxied sand and pieces of coral onto the top of the disk so that it looked like the sandy bottom. Fooled, the fish seek refuge on this "false bottom." Then, rotating the platform steadily and very slowly, by remote control, Kjell is able to position it so that his camera can capture the fish as they pause.

"Panning" a movie camera bothered him because it was so hard to keep the motion smooth without expensive dampening devices. So he rigged rubber bands between the control rod that turns the camera and his hand. "I move the rod very slowly to follow the action

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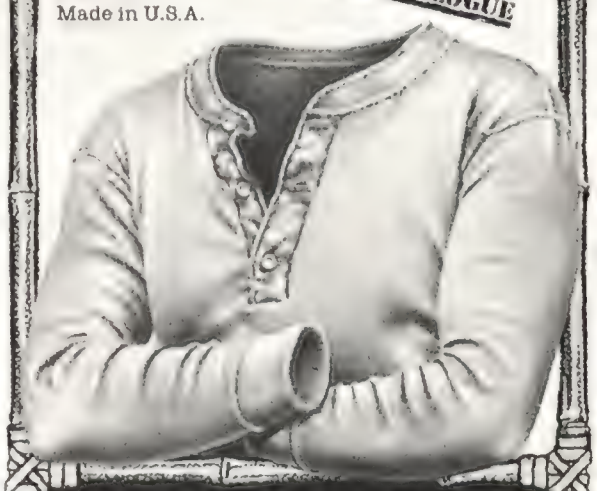

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by pulling on the rubber bands. This moves the camera without a single jerk." To follow microscopic motion—of plankton, let's say—he built a small joystick-operated platform that enables him to move his subject smoothly in any direction, and thus helps maintain sharp focus.

For special close-up photography of animal behavior, he designed a heat dispersal device (a special glass grid that refracts infrared rays upward) to cool the light of the camera, since heat can affect the behavior of the animal being photographed. "Roy Disney saw this device and liked it," he says proudly. This may be one of his most costly items, for he works on a tight budget. His favorite movie camera is an old French 16mm job that looks like one my father had in the '30s. You fit lenses on as you need them, select your speed, and then you wind it up and it goes. "It keeps going, year after year," Kjell says. "It is light and handy and cheap, and it works."

From a briefcase, he produced the frame for an aquarium. Two rectangles made of hollow aluminum rods form the ends. A bag of thin, watertight plastic fits inside the frame, with a Plexiglas window that he has set into it. It is probably the world's lightest aquarium. "Now, you see? I can carry this with me so easily when I go to some place where the scientists are working with sea creatures. And I can set it up in no time."

Generally, Sandved subjects deal with animal behavior. Symbiotic relationships—the mysterious, beneficial alliances between different organisms—fascinate him, and he seeks them out on the scientific field trips that he takes whenever he can, both in the course of his work at Natural History and on his own time as well. He's been to more than 30 countries all over the world, and at almost any given time he's apt to be diving in the Caribbean with marine zoologists, or plunging through an Amazon rain forest to film butterflies and moths, or chasing down his penguin friends in the Antarctic. He has the knack of putting physical hardship out of mind, of half-freezing on a mountain slope or half-drowning in a swamp without seeming to realize it.

A book on shells was Sandved's first U.S. publication. It was followed by books on insects, butterflies, the rain forest, leaves... He can't remember them all himself. He's working now on spiders—has been for years. His marvelous films cover the same sort of ground, but with different themes. One of his posters is a series of butterfly and moth wings whose markings spell out the alphabet, *A* to *Z*.

In books, films, workshops, he remains essentially a teacher of the ways of nature, trying to make it understandable to city dwellers, trying to give it fresh meaning for children, who are generally closer to it. Kjell loves children, but has none of his own. Yet that's not really true, for in a way he has hundreds. And they write to him with a loyalty as firm as their spelling is sometimes shaky:

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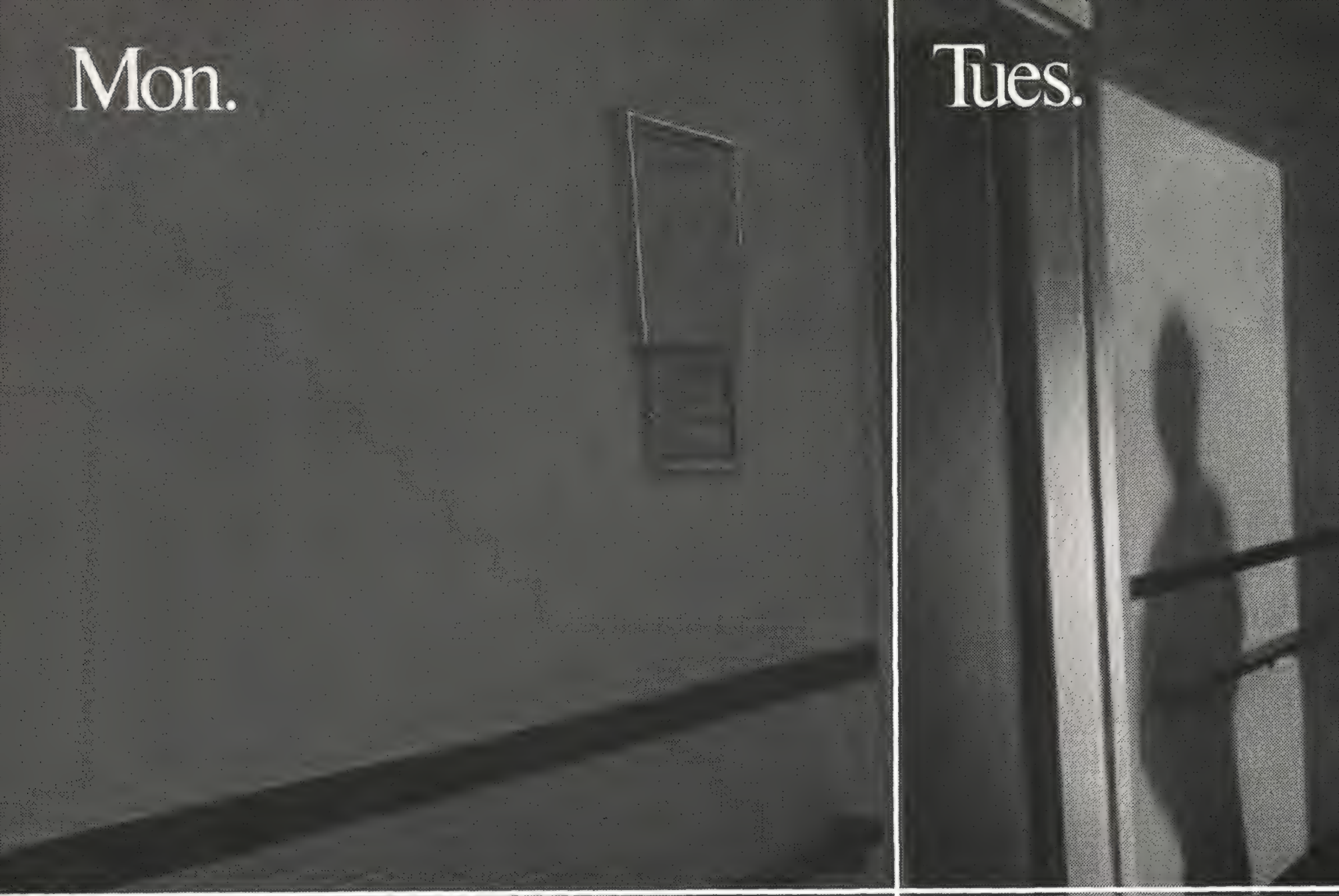

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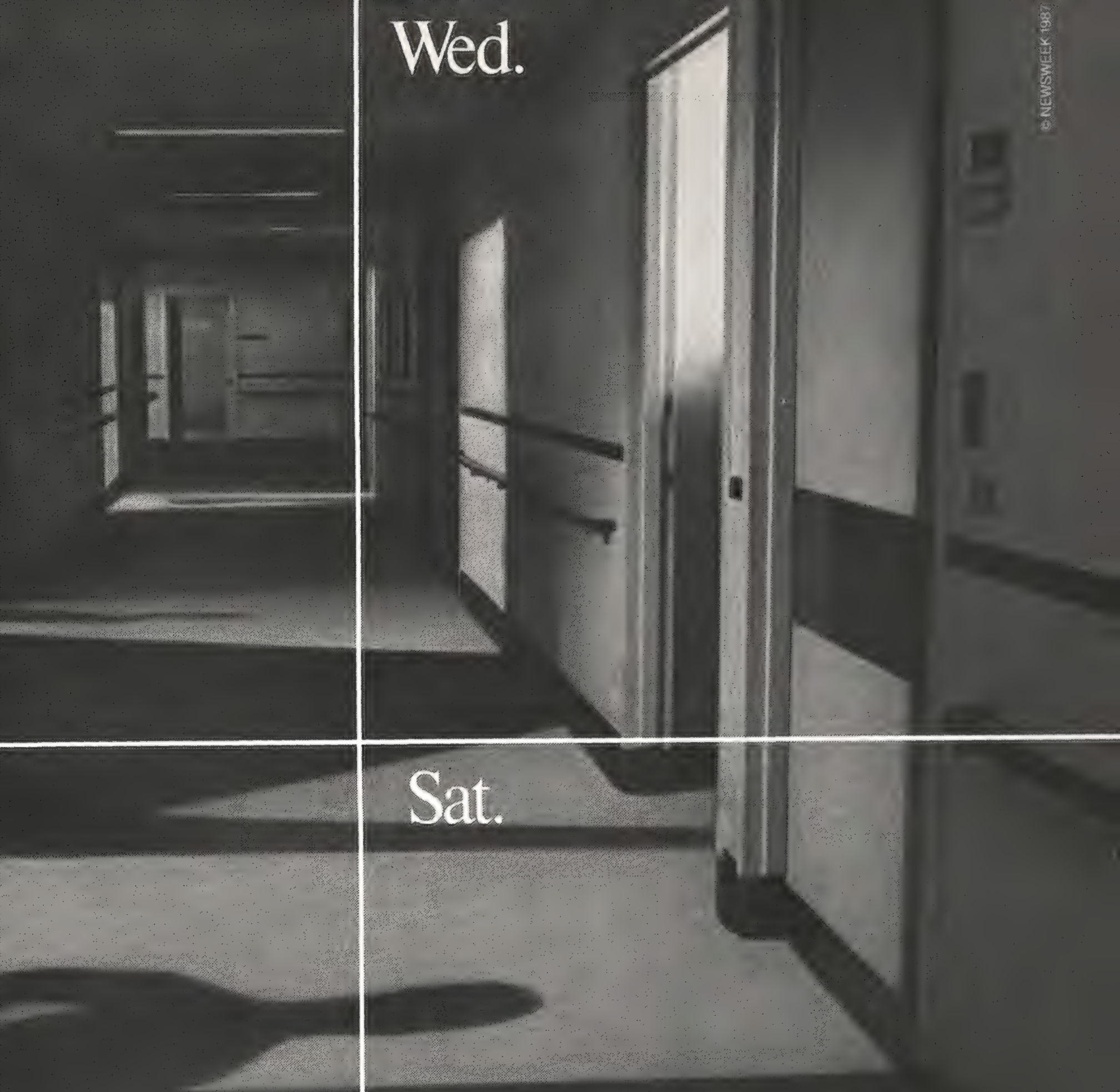

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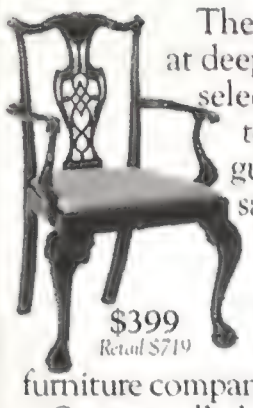

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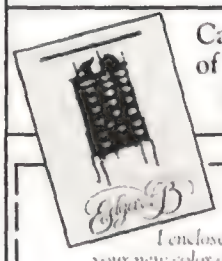

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Phenomena, comment and notes

A walker slips through the barriers of automobile-age conformity and finds it is the best way to see the real world

How does a mild-mannered desk worker assert his independence, rebel against the very structure of society, establish brotherhood with the giants of an earlier age? He turns to a half-remembered skill, the trick that brought him down out of the trees: he walks. Rather than use 150 horses to drive about in a 3,000-pound steel cocoon, he walks. Rather than take a bus, ride the subway, hail a cab, he walks.

A small matter, yet revolutionary. Society does not expect us to walk farther than the parking garage. A friend who spots you walking will invariably assume your car has broken down and offer you a ride. A suburban policeman may ask what you are doing on foot in some subdivision without sidewalks. In the city a walker can quickly find himself in places where no man has gone before, at least in the minds of urban planners and traffic engineers. Start down the sidewalks, carefully obeying the lights and watching for freethinkers. (At some Washington intersections, a red light means "only five more cars and one bus.") But then make your way on foot across or under the approaches to bridges, through the knots where urban expressways come leaping out of the ground. In the suburbs, walk from one shopping center to the next. Try crossing a six-lane highway where some stream of cars always has the left-turn signal. Familiar terrain becomes new, strange and even adventure-filled.

At first you feel conspicuously out of place, as uncomfortable as being in

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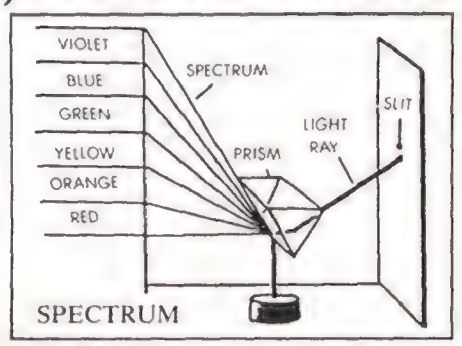

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church in your bathing suit. Then you realize you are anonymous, faceless. As long as you do not actually impede the progress of a car, nobody cares. Nobody really sees you.

Then you can begin to revel. In the country you find that walking the shoulder rather than riding in a car transforms the world. No longer peering out at the world through a window, you are in it and of it. The landscape is no longer a picture in a frame, but real. You see it with peripheral vision, you hear it, you can smell it. The distance from where you are to the next rise suddenly becomes significant, and your arrival there an accomplishment. In the city, being on foot means making discoveries. Taking a shortcut behind a power plant, you find a vacant piece of ground lush with "weeds," being inadvertently seeded further by the "trash" birds of the city. Insects have appeared, presumably by spontaneous generation. Or sit a minute on the "beach" under a bridge carrying the arterial flow of automobiles in and out of the city. Above is the whine of tires, the whump of wheels hitting expansion joints, while below, you bathe in the visual serenity of slow-moving water, flotsam tracing out the eddies. In my own neighborhood is a vacant lot, one I have passed a hundred times in a car. Only on foot did I discover the deep ravine there, and a flowing stream that must have given pause to the original developers.

There is an independence to walking, a freedom to ignore the one-way signs, to cut along a diagonal, to be as arbitrary and capricious as mood dictates. One can force-march or dawdle. One can stop to feel the breeze, to see the sky. No thought need be given to whether one has the right change for the bus or where to park the car. There is no waiting for the next train.

Walking is also free in the commercial sense. No need to join a club, take lessons, buy designer outfits. Entrepreneurs, lately, would have it otherwise. Special walking shoes are promoted, as are newsletters and magazines for those who choose to walk. At least one store devoted solely to the needs of the walker has opened in New York. I assume one can now buy special clothes to walk in for only a few hundred dollars, perhaps something in space-age fabric with stripes down the sides. All of that could make sense if it makes walking special, an event to make room for in one's plan of the day. But the great thing about walking is that all you really have to do is get up out of the chair, open the door, and start.

Now I am talking about plain old walking here, jaunts of up to, say, five miles. Hiking is something else. A person standing in Maine about to head down the Appalachian Trail to Georgia does need special equipment, training, experience. But that's a whole other world. I don't know what it means to walk 20 miles in a day, and certainly not with a pack on my back. I admire those who can from the same distance as I admire carrier pilots and brain surgeons. When I finally read Edward Abbey's *The Monkey Wrench Gang* last summer, I was as taken by George Hayduke's ability to throw a 60-pound pack on his back and walk the otherworldly terrain of Arizona and Utah as I was with the gang's adventures. (Later I read of John Muir's taking off into the mountain wilderness for three-day junkets with just a little tea and bread in his pockets, and thought there must be never-ending levels of self-sufficiency.)

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- a downhearted period that gets worse and just won't go away
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Over 30 million Americans today may suffer from some form of depressive illness. Unfortunately, it often goes unreported, and therefore undiagnosed and untreated, because people don't recognize the symptoms for what they are. Yet, depression can be easily diagnosed and treated in most cases. It's most important to realize that you are not alone by any means.

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Walking is now In among the health conscious. Retirees march up and down inside air-conditioned malls, much like swimmers doing laps in a pool. Joggers come in out of the pain. Common sense says moving is better than not moving. And at times I have been very scientific about it. After a lunchtime walk through city streets or riverside parks, I would take out a piece of string and a map and carefully measure the miles of my peregrinations. A lunch hour of errands might mean two miles; an honest-to-goodness walk as much as five. Add on a mile to the subway in the morning, another at night, and a mile walking the dog, and I could brag about 20 to 25 miles a week. By itself it is no way to lose weight: you have to walk on the order of 40 miles to lose one pound (the number depends on such factors as how fast you walk and how much you weigh). And although you may feel better, that level of walking will not get you to the Olympics. I take a test every day: the five-block uphill section of the walk home from the subway. It never gets any easier. I even train for it. At work there are 44 steps up to my office. I climb them at least half a dozen times a day. All good scientific studies need special units, and I have devised mine. The Washington Monument has 898 steps. So five trips up the stairs at work, a total of 220 steps, is about .25 Washington Monuments, or WM for short. Ten trips is .5 WM. A good week can mean 2 WM. I may never get in shape, but I will never know how much worse off I would be without those steps, without those miles. I tell winded visitors it is the steps that keep me alive.

Walking has its hazards: the dog next door who bitterly resents my existence, the nail that drives into my heel as I reach the point in the river park farthest from office or public transportation, the sudden downpour. It can induce mild failure of nerve, when I slump onto a bench on a lunch-hour trek to contemplate the trip back, thinking this time I have gone too far. But it can also offer its own pleasant surprises, such as a mysterious pedestrian tunnel under the southbound lanes of an Interstate, which delivers the walker to an otherwise unreachable sunken meadow. It alters the perspective and offers a delicious feeling of subversion in managing for an hour without the assistance of machines. For those minutes, one is free.
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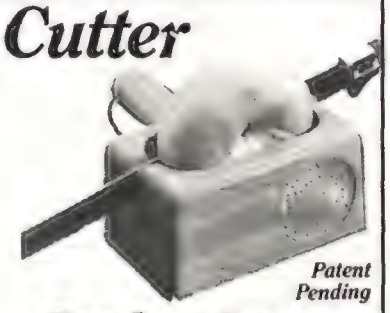

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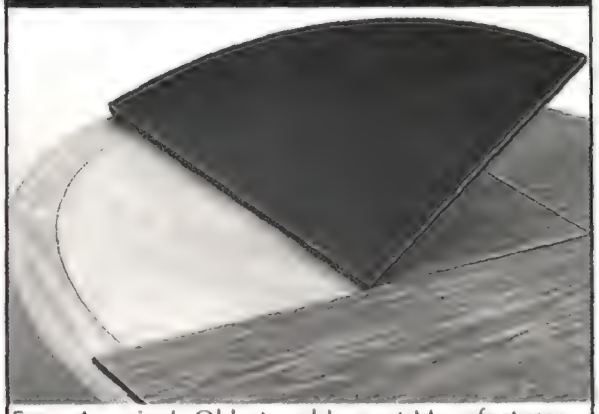

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Elegant, inviting, the domed entrance pavilion of National Museum of African Art overlooks fountain in Enid A. Haupt Garden. Play of water is continued in bubblers, rills sunk in massive granite benches.

New treasures on the Mall

Set off by fountains in an ordered garden, the National Museum of African Art and the Arthur M. Sackler Gallery make their debut in what was—not that long ago—a parking lot. You wouldn't know it now

By Helen Dudar

The old South Yard of the Smithsonian Institution is a 4.2-acre stretch of land with a venerable history of impermanence. In 140-odd years, sheds and other temporary buildings have come and gone, having housed working scientists, horses and carriages and, for a while until the city of Washington got a proper zoo, a herd of undomesticated animals. During World War I, aircraft engines were repaired on the grounds, and more recently, it was a parking lot. Today, it has a classier name and a lasting purpose. More than four years after builders began gouging a crater nearly the size of a football field on the property, the old yard is now called the Enid A. Haupt Garden (but

Granite garden based on Beijing's Altar of Heaven fronts entrance pavilion of Arthur M. Sackler Gallery.

Design echoes simplicity, harmony of Oriental garden. Nine-foot granite moongate at left is one of a pair.

is known as the Quad to Smithsonian staff), and it is now offering up two new museums in the form of buried treasure.

They are the Arthur M. Sackler Gallery, a singular collection of works of the Far and Near East cultures, and the National Museum of African Art, the country's only institution dedicated solely to the artistic roots of its black population. Except for separate entrance pavilions, the museum complex extends far below the surface of the earth, well below the explosion of colors in the Enid A. Haupt Garden newly planted on the site, and even—at the third level down—a good many feet below the water table.

Now consider the cheek of putting a pair of museums underground when almost any new cultural institution these days is apt to wear a glass skin and to reach for the sky. Transporting people into an urban cellar, as in subway travel, may be efficient but it is not widely regarded as life-enhancing. As the principal architect, Jean Paul Carlhian, noted when he began to contemplate the challenge of the work at hand, both the metaphor and the reality are daunting: you go down to join the fevered crowds on bargain basement sale days, for example, and, in terror, you go down to hell. On the other hand, in good times, you're flying high; in the best of times, you may even reach cloud nine.

Still, if the Smithsonian were to add two more museums to the seven already on the Mall, the only realistic solution was to achieve heaven under earth. The complex is bounded by three sizable, muscular structures: the Freer Gallery of Art, the Smithsonian Institution Building, popularly known as "the Castle," and the Arts and Industries Building. To have filled the empty acreage with yet another grand building would surely have created unsightly urban cultural sprawl. It would also probably have stirred the capital's public-interest groups to intractable opposition. As it was, a legion of guardians of the cityscape—to name only a few, the Don't Tear It Down Committee, the Victorian Society of America, the Committee of One Hundred on the Federal City—would be heard on the project before the first shovel struck the earth. (They could hardly be expected to do anything less.)

The new museum complex comes to us, two decades after feasibility studies were first done, at a cost of $73.2 million, half in federal funds, half from private donations. The total includes $850,000 which was the price of respect for age—the sum spent to enclose and protect the yard's century-old linden tree during construction. The magnificent tree managed to survive and now flourishes, a monument to modern horticultural and engineering expertise.

Nothing that takes this long is immune to the erosions of time and human conflict. The eminent Japanese architect Junzo Yoshimura, who sketched the first rough design for the project in 1978, suffered a stroke two years later and could not continue his work with his American collaborator. The man whose vision and drive launched the project, S. Dillon Ripley, Secretary of the Smithsonian Institution, retired to emeritus status in 1984. Four months before opening day, Dr. Arthur M. Sackler, 73, the collector who had given a rich hoard comprising 5,000 years' worth of Asian art to the gallery that carries his name, died. Finally, as construction came to an end, Jean Paul Carlhian, the architect who translated Yoshimura's ideas into a building plan, was so unhappy about changes wrought by the occupants that he no longer talked to many of them. French-born partner in a distinguished old Boston firm, he was in mourning for the integrity of his design.

The alterations that distressed Carlhian may or may not impinge on the sensibilities of the average museum visitor. What the public sees at ground level is surely a feast for the eye. There is, first of all, the Kiosk, the entranceway for those who work on the lowest level where some Smithsonian offices are housed. A small, round, copper-domed structure, the Kiosk has the wit and demure charm of a design by an extremely sophisticated child.

The two pavilions nearby are plainly more serious. Carlhian has avoided the temptation to provide twin structures. A suave unmatched pair, they are similar in scale, but differ in details—African Art's roof is domed, the Sackler's, pyramided—that tactfully echo the dominant forms of the neighboring vintage Smithsonian buildings. Both are sheathed in granite, but the Sackler is a muted gray and the African Art a bold, glistening pink. From the outside, they look rather modest; inside, under soaring ceilings, they become luxuriously spacious. Carlhian speaks of them as "grand vestibules," elegant, light-filled spaces where a visitor will pause for a quiet moment to prepare to go down to the art. While the architect discarded Yoshimura's early notion of giving each building an ethnic flavor, he designed outdoor gardens that convey nuances of cultural difference. The Sackler's is still and contemplative, a Western image of an austere, soothing Oriental garden. The African Museum's, on the other

Milo C. Beach is assistant director of Sackler Gallery. Photomural at left depicts art objects of the ancient Near East on display in opening exhibit.

hand, has an exuberant array of little waterways reminiscent of North Africa that flow, gurgle, spill, geyser.

It was both chance and need that made neighbors of these two fairly disparate establishments. If they share anything, it is their "otherness," visual traditions alien to most Western eyes. Many Americans come late to these arts. In fact, in many parts of the world, African arts have come late to or are still missing from museums and centers of study. As recently as the early 1950s, when Roy Sieber, the scholar who is associate director of the African Museum, set out to learn about African art, only one American university offered a formal graduate program in the field.

The National Museum of African Art, founded in 1964, is here because it dwelt in nine linked town houses on Capitol Hill and had no place to grow. It had a thriving educational program for its community, but the number of visitors—45,000 in 1985—was modest by any standard. "It was hard to find," says its director, Sylvia Williams. "And when you got there it was hard to park. And if you didn't drive you were faced with a very long walk because it was hard to get a taxicab."

Founded by Warren Robbins, a former U.S. Foreign Service officer with a passion for the tribal arts of the continent, African Art became part of the Smithsonian family of museums in 1979. Williams, who had been curator of African, Oceanic and New World collections at the Brooklyn Museum, came to Washington four years later, one of only two black women to head an American museum. She is hardly insensible to the fact that she is presiding over a rare moment in the history of her people and her profession. But Williams is an extremely self-contained person, a scholar naturally resistant to the seduction of hyperbole.

Earlier this year, a few months away from the opening, she agreed it might well be an epic occasion, "but I don't dwell on that because that could lead to a kind of paralysis. There's a job to be done, let's get it done. After we open, then there will be a resurgence of that feeling for all of us."

The job to be done has wandered far beyond the usual problems of settling into new quarters. When Williams arrived from Brooklyn, the museum owned 6,000 objects, the majority, she noted, "useful for study." This is a polite way of saying that the museum lacked a range of museum-quality pieces, masterworks that could stand under cruelly bright lights in the surround of Plexiglas and, by their power and intensity, command the casual stroller to "look at me."

As a result, the African Museum begins life on the new site with rather more exhibition space than show-worthy art. Its directorate has spent some of the last four years buying—slowly and, often, cannily—and, for its opening shows, borrowing abundantly. In its five inaugural exhibitions, at least half the objects on

Roy Sieber, the associate director at African Art Museum, examines ivory Yoruba divination cup. At right are objects from the permanent collection.

View of new museums' entrance pavilions shows Sackler's at far left beside Director Thomas Lawton.

display will be loans from private and public collections here and abroad. Given the level of the material Roy Sieber has found for a show he calls "African Art in the Cycle of Life," it would be hard to complain about this circumstance.

A good deal of the African art we see is often fairly recent, seldom earlier than the last century. But the Cycle of Life show is full of surprises—rare, brilliant relics of older cultures that survived climate, ritual destruction and nomadic travels. The loans include a 17th-century brass cross made during a time when Portuguese navigators visited the Kongo Kingdom and made a few temporary converts; an elaborately carved ivory salt cellar, an uncommon 16th-century piece actually created in Sierra Leone for export to Europe; a northern Nigerian terra-cotta head produced between 500 B.C. and A.D. 200, one of the oldest pieces unearthed in sub-Saharan Africa.

Among the first installations, one exhibit is the result of a happy windfall. The Smithsonian's Hirsh-

Helen Dudar wrote on the 20th-century Wing of New York's Metropolitan Museum in May 1987 and the Dallas Museum's Reves Collection, January 1987.

African Art's is at lower right behind Director Sylvia Williams. Smithsonian Castle dominates background.

horn Museum owned a hoard of Benin court sculptures. Part of its benefactor's original gift, they never seemed entirely at home amid the modern treasures assembled by Joseph H. Hirshhorn. So the copper alloy pieces, a highly dramatic and entrancing array of 17 royal heads, wall plaques and altar works produced over the last 500 years, were turned over to the new neighbor two buildings down the Mall. Added to the four pieces already in the African Museum, they are an amazing sight: fierce, theatrical concentrations of energy aglow in a medium-sized gallery.

The museum's other major acquisition delivers drama of a different sort—curving walls draped with 16-foot lengths of handwoven, vegetable-dyed textiles made in this century in Mali, Sierra Leone, Côte d'Ivoire and Ghana. A few years ago, in partnership with Smithsonian's Museum of Natural History, African Art bought a great collection of 1,500 pieces of which the public will see about three dozen at a time. Other museums show African textiles, of course, but what is significant about this large group is the provenance. The collectors were a British couple who spent years acquiring and documenting each piece that they bought and often knew the names of the maker or the

At African Art Museum (from left) Rosemary DeRosa, Richard Stetson, Louise Trush unpack works on loan.

Conservator Jane Norman of Sackler Gallery works on a 1,000-year-old Chinese head of Buddha.

John Zelenik, assistant design chief, installs group of ancient Chinese ritual wine containers at Sackler.

owner. Like so many tribal arts, this one is dying as modernization creeps across Africa, as the apprentice system crumbles and as the men who know the secrets of the craft succumb to age.

African Art's co-tenant is labeled a gallery, rather than a museum, because it was conceived as an arm of the Freer and as a solution to a vexing institutional problem: how to grow without trespassing on the founder's principles. The museum, launched in 1923, was the gift of Charles Lang Freer, a Detroit financier, whose unyielding requirement for his superb collection of Eastern arts followed the Polonius rule: neither a borrower nor a lender be. Freer saw his museum not only as a sanctuary for connoisseurs who wanted to see rare Orientalia but also as a center for study; scholars who came to work there were not to be disappointed because pieces crucial to their efforts were on display 3,000 miles away. By the same token, art could be added by purchase or gift but not on a temporary basis as a loan. The collection, of course, grew over the decades and in time the Freer was pressed for space for storage and study as well as for other necessities.

The Secretary meets the collector

Plans for an addition—the two galleries have an underground connection—were well under way before anyone knew how the new space was to be filled. Then in 1982, someone he encountered at a party suggested that Dillon Ripley might profitably make the acquaintance of Dr. Arthur M. Sackler. Thus, one day, the Smithsonian Secretary traveled to New York to meet the collector and examine some of his vast holdings. Sackler, a psychiatrist and researcher, had made a great deal of money in medical publishing and had spent Mycenaean sums on art. Starting with his first purchase of Chinese ceramics in 1950, he sometimes scooped up rare works as if he were buying books by the yard. His interests grew to encompass the Middle East as well as the Orient and he was apt to acquire entire collections of artifacts from a single excavation.

Too numerous to be kept in one place, pieces of the collection were in his town house and his summer refuge, in storage rooms provided by the Metropolitan Museum in New York City, on loan for shows at Harvard University's Fogg Museum as well as at Princeton and Columbia; the overflow reposed in wrappings and cartons in several Manhattan warehouses. Ripley was to see only a fraction of 5,000 items. What was crucial was that the encounter between the two men was productively congenial; it resulted in Sackler's generous offer to allow the Freer to select objects worth $50 million. He would also contribute $4 million to the construction cost of the new complex.

In the late summer of 1982, Thomas Lawton, the scholar of Chinese art who is director of both the old and the new galleries, set out to choose Sackler art. It was not a journey into the unknown; many of the pieces had been exhibited at some time within his memory or were known to specialists in the field and had been pictured in books. The selection process took six weeks. On occasion, Lawton worked from photographs, but in every instance he had seen the piece. Nearing the $50 million mark, he realized one day that he had hardly exhausted the list of objects he hoped to bring back to Washington. The dilemma was mentioned to the owner. In response, Sackler casually waved the maximum, saying, "Oh, forget about the $50 million and take what you want."

Lawton calculates that the 1,000 pieces he wanted and took—Chinese paintings, jades, bronzes, lacquer work, as well as many ancient pieces from the Middle East—are worth at least $75 million. It was a curator's dream, the fulfillment of a fantasy rarely granted to most museum people. "We weren't just making selections from a large holding, we were selecting masterpieces in every category," Lawton said. "Now this particular bronze—"

On the coffee table in his bright corner office at the Freer reposed a half-dozen prime objects from Dr. Sackler's gift. Like everyone at the museum who is about to handle antique metal, he drew on a pair of white cotton gloves to protect the surface of a large ceremonial vessel. "This particular bronze," he continued, "is Shang dynasty and it's extraordinary not only for its beautiful shape and patina but because it has a long inscription inside that any specialist in Chinese art knows."

Two enchanting owls from 1200 B.C.

Setting it down and gently picking up another Shang bronze, he went on: "Now this may well be the finest example of bronze casting that we have. It's also Shang dynasty, around 1200 B.C." The piece was intended to hold ritual wine. The entire surface is intricately worked and out of the contours of its bowl peer the enchanting faces of two owls. "It's very famous," Lawton continued. "I think most museum directors around the world have been salivating about this one for a long, long time."

The bronze is replaced with a small, green jade figure of a fierce dragonlike creature; it has great curling fangs and a mane that swirls back on its body in a stylized design of elegance. A work of the 13th or 14th century, it is, he noted, "a milestone in the history of jade carving." In all, Lawton came away with 450 jades notable not only for their beauty but because they pretty well represent the full range of Chinese

Suspended stairway under the angular skylight and door take up Sackler pavilion's geometric design.

Fanciful copper-domed Kiosk is entry to underground concourse, offices of Associates, education programs.

traditions of working with this difficult, rewarding material; the Sackler jades date from the late Neolithic period, around 3500 B.C., and extend through five millennia into the 18th century.

Some of Sackler's artworks arrived dirt-encrusted, battered or crushed, the result not of any recent abuse but of great age or the circumstances of their discovery. They might have been extracted from burial sites by thieves who had no patience for proper excavation techniques and who spirited them away casually stuffed into sacks. Sackler bought them if they caught his interest and often simply stored them. It was left to the Freer's conservation team to x-ray everything and to clean, repair and restore close to 700 pieces.

Much of the work was done at the Institution's Museum Support Center in Suitland, Maryland, a big, undistinguished building with broad, spookily empty corridors, exposed ceiling piping and securely locked doors. One day recently, W. T. Chase III, the Freer's head conservator, unlocked a door and lifted out an extraordinary lacquered box on which he had nearly finished working—a small cabinet with 12 removable trays, each with a place to carry inkstone, a water dropper and a brush and each inlaid with mother-of-pearl in a different design. It was a 14th-century Chinese traveling case probably owned by a royal court figure and in all likelihood carried into the countryside with parties of writers who would spend an afternoon composing poetry. On the shelf with it was a small plastic box that held barely visible slivers of pink and green mother-of-pearl which Chase, working under a microscope, was restoring to the delicate inlay. He was also still in the process of cleaning the piece, using saliva and Q-tips smaller than standard ear swabs. Altogether, Chase calculated that he had spent 200 hours restoring this remarkable piece to something like its original splendor.

A scrap of silk beyond price

Sackler refused Lawton only one object, a 2,400-year-old square of cloth so darkened and discolored by age it hardly seems worth a second glance and so important that it is beyond price: the Chu silk manuscript, the earliest example of an illustrated Chinese text, which demonstrates the transformation of a number of everyday objects into their ideograms. To Orientalists, Lawton said, it is "the single most famous object in the collection." The silk came out of a burial site illegally excavated about 40 or 50 years ago, and the Freer once declined to buy it because its value seemed more archaeological than artistic. Because it is unique, Sackler felt he might want to see it go back to China some day. In the meantime, the precious scrap of silk is on loan and will be seen in the opening show.

Architect Jean Paul Carlhian is chief designer of museum-garden complex. At right, three stories underground, is grand concourse with fountain, plants and daylight from skylights, all designed to banish claustrophobia.

So, too, will a sampling of another major hoard that came to the Sackler as a result of luck, persistence and a sizable sum of money. Two years after Lawton's sweep of the Sackler holdings, Milo C. Beach arrived in Washington to be the assistant director and day-to-day manager of the new gallery. Beach, who was chairman of the department of art at Williams College, is a specialist in Islamic painting of India, and for years he had looked for and asked about a major and apparently lost group of Persian and Indian works.

They had belonged to the celebrated Paris jeweler Henri Vever, and were known to scholars because their owner had lent them for museum shows, and they were pictured in surviving catalogs. When Vever died in 1943, one of the richest stores of Islamic art in private hands simply vanished from sight. By accident and then through some astute sleuthing, Beach and Glenn Lowry, the museum's curator of Near Eastern Art, found the new owner, an American in Paris. After many months of negotiation, the collector, who has insisted on anonymity, agreed to sell his Vever art for $7 million, a bargain in the current market. For that sum, the Sackler got 500 rare paintings, calligraphies, manuscripts and leather bindings. A dozen or so will be seen at the inaugural exhibition and a major show is to be mounted in 1989.

What the average visitor is never likely to encounter is the behind-the-scenes educational reach of the two museums. Both are hoping for or already launching ambitious international training programs—essentially postgraduate courses in modern museum management. This month, the Sackler has its first two visiting scholars, a senior and a junior archaeologist from the People's Republic of China, who will spend a year studying the collection. African Art needs to round up funding and fine-tune its operations before it begins to extend the same helping hand to museum people from new African countries that are just beginning to build their art institutions. Sylvia Williams rejects the idea that efforts like these are undertaken out of a sense of obligation. "I wouldn't call it that. We want to do it. I think it should be done. That kind of interchange has existed for Europe and the United States for many years, and we'd like to see it developed on another continent."

Each museum has serious and fresh community activities in the works. African Art's educational department has produced a teacher's manual, *The Art of West African Kingdoms*, in hopes of bringing these barely known traditions into high school classrooms. Before the end of the year, the Sackler will launch a concert series of Middle and Far Eastern music with the appearance of the great Indian sitar player, Vilayat Khan. In addition, Beach says that the Sackler is determined to pursue an enterprise that, if not unique, is still fairly uncommon in the museum world—publication of bilingual catalogs, produced by and useful

to art scholars of two worlds. The first will memorialize a giant show of Indonesian court arts planned for the Sackler Gallery in 1990-91.

The building that houses these programs and precious goods is a monument to modern construction techniques. It extends 60 feet into the ground, well below the water table which begins at 42 feet and is fed by a subterranean stream known as Tiber Creek. In permanent commemoration of the damp surroundings, two glass pipes rise in a corridor wall on the third level, so that at any time anyone working down there can observe the presence of dirty yellow water in the soil. Because two of the nearby buildings are old and fragile, great care had to be taken to guard against earth shifts around their foundations during the construction process. A new, costly excavation technique, developed in Europe, allowed the builder to pour concrete walls without formwork. The building actually has double walls, each 2½ feet thick and separated by a space the same width.

The architect's quarrels with the occupants began when the two museum staffs took over their spaces and revised some of his interior design. Change and compromise is an enduring fact of an architect's working life, but in his distress and anger over the twin-museum project, Jean Paul Carlhian, a partner in Shepley Bulfinch Richardson and Abbott (founded by the great Henry Hobson Richardson) is convinced that his experience with the building is unique in the 114-year history of his great firm.

Carlhian's grievances touch on the fact that he has been ignored about myriad alterations: coffered ceilings which were to have hidden light fixtures were eliminated in favor of flat ceilings and track lighting; mirrored walls intended to expand the sense of space at the head of the stairs were discarded; a monochrome tinted-glass window ordered for each entrance pavilion, to block the unsightly view of a federal building across the street, was not installed in the Sackler's entryway.

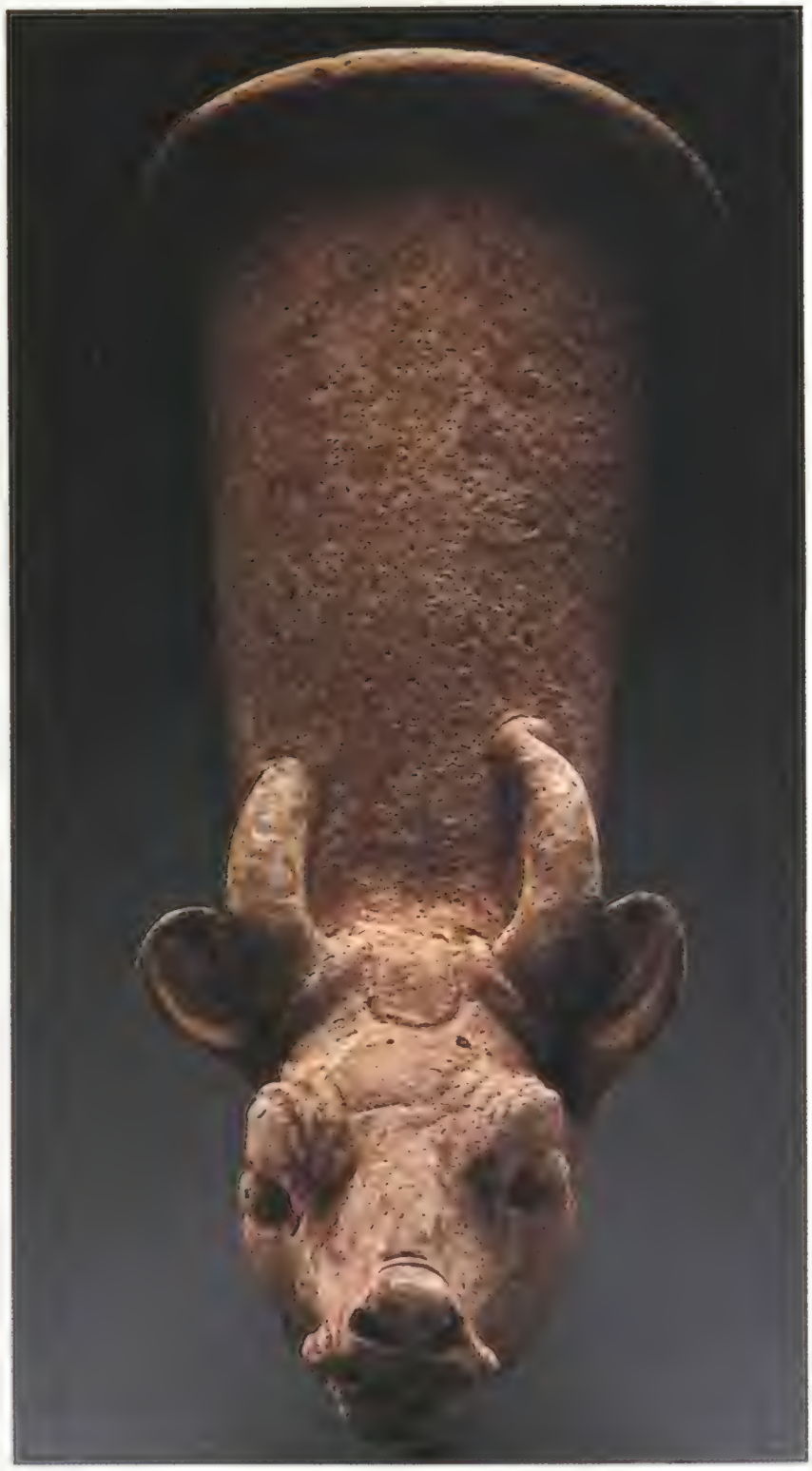
But his abiding concern is the loss of an immense second-story gallery and the vistas it offered. Carlhian's aim was to counter the kind of unease and discomfort that buried spaces can stir. His solution was a second-floor gallery, the size of a basketball court, that could be seen from first-floor balconies above. It was to have been shared by the two museums, and the possibilities of its usefulness for other occasions—dance recitals, Inaugural balls, banquets—seemed unlimited. But the two museums each wanted space on a permanent basis, and the giant gallery was cut in half with a removable wall.

The African Museum is using its half without significant changes. The Sackler, on the other hand, has divided the remaining section into six small or medium-sized galleries enclosed within temporary walls that can be dismantled if later shows require different spaces. From the museum's point of view, the redesign is eminently rational. For one thing, many of its pieces are so small—ancient Chinese jade belt hooks, for example, no more than two inches long—that they are likely to fade into insignificance in grand, soaring spaces. Patrick Sears, the Sackler's design director, is partial neither to the high ceilings nor to the vistas that Carlhian favored. "It has always bothered me," Sears says, "the idea of standing in one space overlooking another and seeing the glare of spotlights glinting off the tops of exhibition cases. Or experiencing something at such a great distance that it holds no magic when you reach it." Perhaps most notably, it appears that, in the Sackler at least, large spaces were sacrificed for small ones and then furnished with thematic exhibitions because it was the obvious way to deliver digestible doses of unfamiliar art to an untutored audience.

In either institution, no one is entirely certain how the public will respond to the idea of underground museums. In both places, everybody seems to worry about it occasionally, only to conclude that it is probably no cause for concern. The Sackler and African Art begin life with the advantage of novelty—a powerful magnet of our times—and, certainly at first, sizable audiences will flock to inspect them. The challenge is to provide an intellectual atmosphere that will be seen as hospitable. Or, as Milo Beach puts it, they hope that visitors will be glad they came and will want to come back.

Ambient trompe l'oeil mural by Richard Haas, 40 feet high, 45 feet wide, decorates rear wall of concourse.

A directors' choice of objects in premiere shows



This ceramic rhyton (drinking horn), dated between 100 B.C. and A.D. 100, is thought to come from Iran.

Kuba wrapper of appliquéd woven raffia (detail) is used for shroud, or worn by women on special occasions.

From the trove of magnificent pieces, museum chiefs Thomas Lawton and Sylvia Williams choose some of their favorites

Highly decorated cups like this, Sylvia Williams says, are prestige objects among the Kuba peoples of Zaire.

Thomas Lawton notes that in *Lotus,* artist Qi Baishi emphasized bonds between painting and calligraphy.

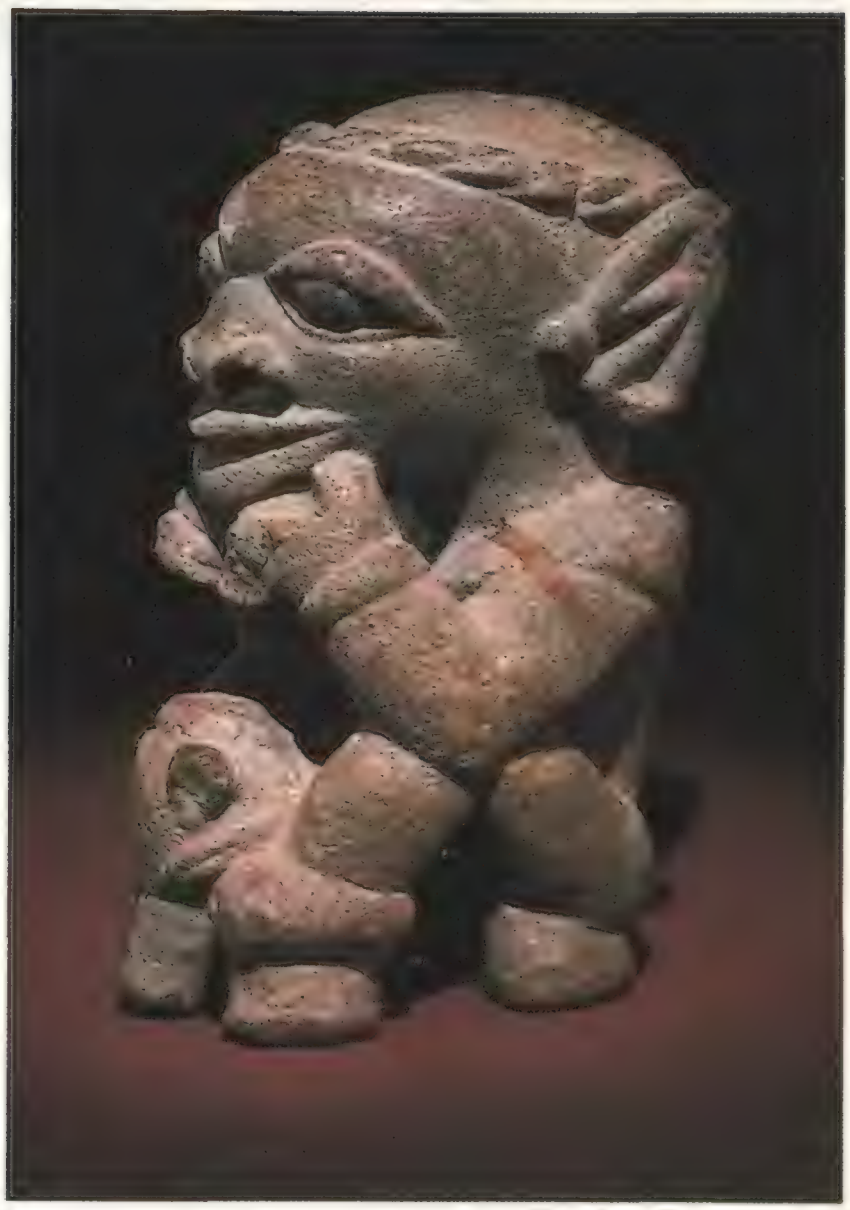
A Donkey for Mr. Zhu was painted by Qiu Ying, c. 1550. Work is traditional, but Lawton points out

Initiation mask by the Chokwe of Zaire, Angola, says Williams, is admired for elegance, delicate carving.

Pair of bronze *gu* (ritual vessels), fashioned around 1200 B.C., flank two bronze *zun*, ritual wine containers.

the "humor conveyed by the calculated juxtaposition of the two startled figures and the stubborn donkey."

Although decorated with varying motifs, all have *taotie,* or monster masks, common on Shang objects.



Mende peoples, Guinea Coast, find old Sherbro Bullom stone figures and use them to assure good harvests.

This rare carved lacquer box from the Yuan dynasty (A.D. 1279 to 1368) shows two parrots among peonies.

Tall wood and seed headdress is made by Koro Ache peoples of Nigeria to celebrate agricultural season.

Opposite: Wooden cup by Yoruba peoples of Nigeria was made to hold palm nuts used in divination rites.

Chinese bronze (above) was container for ritual wine, says Lawton, but can be appreciated as sculpture.

Flamboyant bird decoration on Zhou dynasty ritual food container is rare, probably a regional variation.

Nigerian vessel with chameleons was cast by lost-wax process. Williams calls it "technical tour de force."

Of striking bronze reindeer (left) Lawton says there are many questions as to date and provenance, "but there is no denying the intense visual attraction of stylized body" and drama of curved antlers. Fired clay vessel (above) painted with natural pigment, is from Malawi. Opposite: Shang dynasty ritual wine container (15th century B.C.) may be earliest of its type on record. Powerful carved figure of woman and child, made by the Yombe of Congo and Zaire, is symbol of human perfection and fertility.

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this document united a nation.
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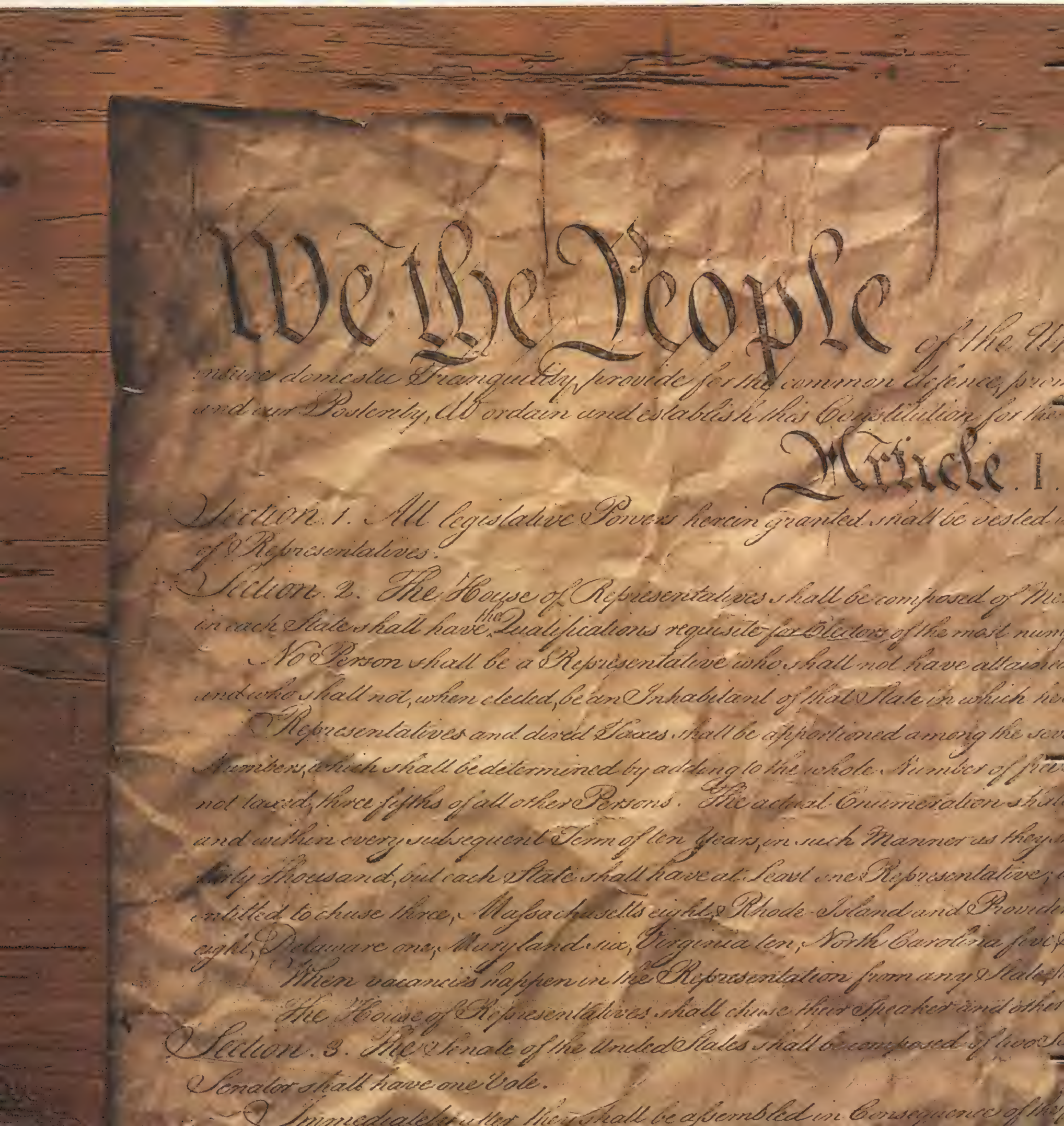

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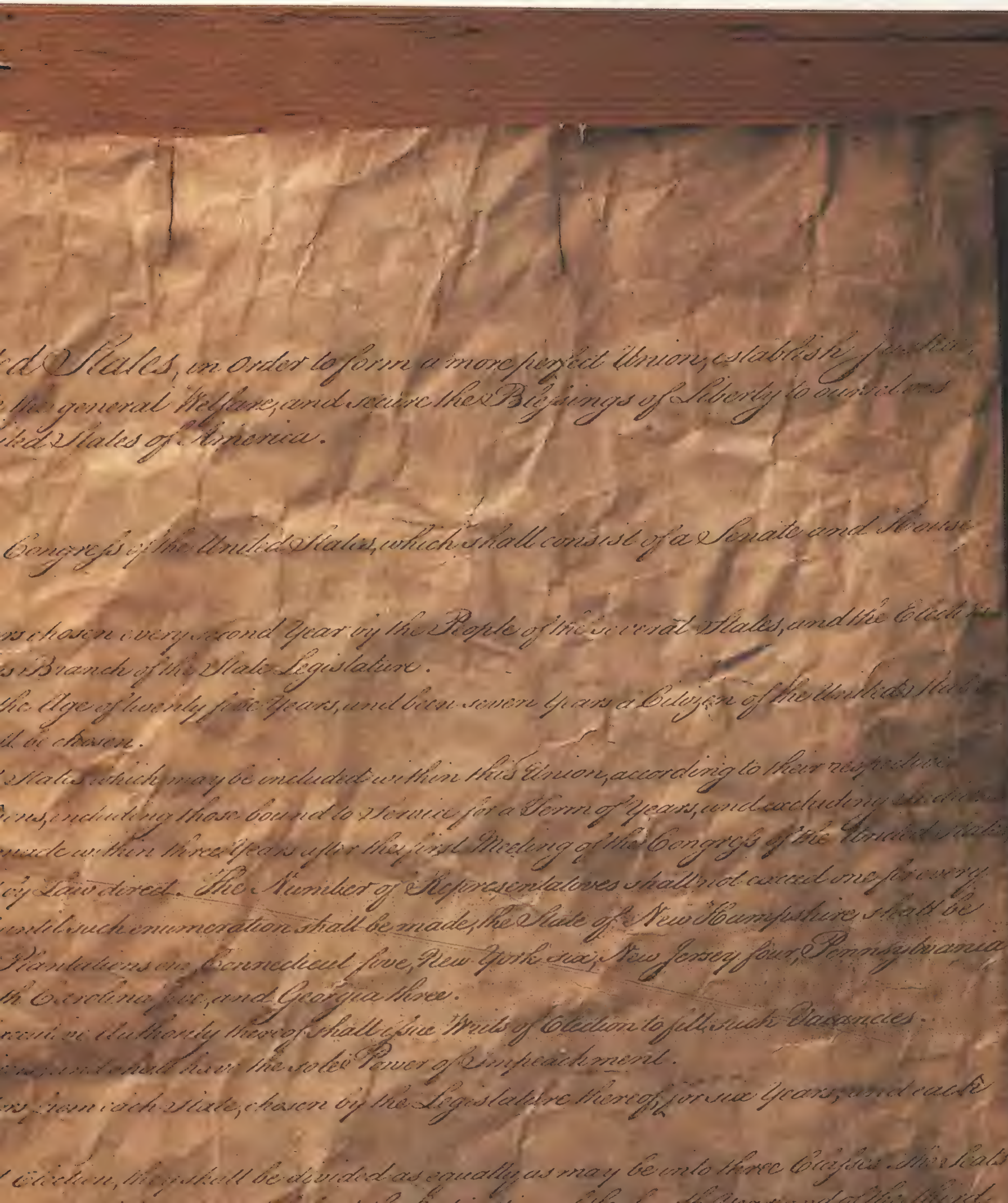
d States, in order to form a more perfect Union, establish
the general Welfare, and secure the Blessings of Liberty to ourselves
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Congress of the United States, which shall consist of a Senate and House
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made within three Years after the first Meeting of the Congress of the United State
by Law direct. The Number of Representatives shall not exceed one for every
until such enumeration shall be made, the State of New Hampshire shall be
Plantations one, Connecticut five, New York six, New Jersey four, Pennsylvania
th Carolina five, and Georgia three.
ority thereof shall issue Writs of Election to fill such Vacancies.
the sole Power of Impeachment.
two Senators from each State, chosen by the Legislature thereof, for six Years; and each
Election, they shall be divided as equally as may be into three Classes. The Seats

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By Hemanta Raj Mishra and Eric Dinerstein

New ZIP Codes for resident rhinos in Nepal

Having staged a comeback in Chitawan, some of these still-endangered animals are being moved to stock another reserve farther west

A midnight truck caravan rumbled cautiously along the winding roadway of southern Nepal. The high beam of the December full moon flooded the route through the outer Himalayan foothills, exposing our convoy of three timber lorries and two pickups. We climbed in and out of steep ravines, alert for the presence of bandits rumored to lurk in these mountains. Fortunately, the road was deserted at this hour; only a highway patrol of jackals stopped and noted our passing. Behind us, boxed in a wooden crate, like a sideshow exhibit en route to the next carnival site, grunted a giant rhino, one of the three captured earlier in the day. Bewildered but drowsy, the behemoth probably wondered what narcotic-laden plant it had eaten to conjure up such a nightmare.

This was no hallucination, but the result of a carefully planned field operation: to restock Nepal's Bardia Wildlife Reserve in the western lowlands with rhinos captured from Royal Chitawan National Park, 220 dusty miles to the east (SMITHSONIAN, February 1975, August 1978). Rhinos have staged a comeback in Nepal, increasing steadily over the past 12 years; there were about 250 to 270 animals in 1975 and 350 to 370 in 1986. The control of poaching and cattle grazing inside Chitawan spurred the recent increase and fueled optimism for the future of rhinos in Nepal. Nevertheless, leading conservationists recognized that their status would remain threatened until a second population of rhinos could be established in one of Nepal's other lowland reserves (an upswing in poaching or an epidemic could doom Chitawan's rhinos). With the benefits of modern technology—dart guns, immobilizing drugs and trucks—we hoped to put rhinos back where Man, in his ignorance, had run them out.

Our effort to restock Bardia with rhinos meant that we would be forced to subject these magnificent creatures to a long night of discomfort. Having studied them for the past three years and come to know individuals as friends, we sympathized with the ordeal that lay before these one-horned colonists. Sometimes, playing the role of modern-day Noah forces biologists to decide between temporary inconvenience for a few individuals and the welfare of the species as a whole.

Periodically, we stopped to check the crates. We told villagers nosing about the trucks that we were hauling spoiled produce to a fertilizer plant. In truth, the value of our payload could not have been overestimated. The entire population of greater one-horned rhinoceros (*Rhinoceros unicornis*), the second largest of the five species of rhinos, has been reduced to no more than 1,200 to 1,500 individuals overall. As such we were chaperoning almost a quorum of the world's such beasts in our timber trucks. The clandestine nature of our journey imparted a sense of lawbreaking, but this midnight gambit, conceived and supported by King Birendra of Nepal, rumbled through all the checkpoints with full cooperation of the police.

Murmuring mantras to ward off demons

We stretched our legs by the roadside, sore from a long day of riding elephants in hot pursuit of the rhinos now crated and bound for Bardia. To capture, immobilize and load three rhinos in eight hours required teamwork, luck and a blessing from the gods. Our day began at 6 A.M. as a local witch doctor, employed specially for the occasion, warded off the evil spirits and demons by murmuring mantras and shaking his body vigorously. Baddhai Subbha, our elephant supervisor, led a black goat into the woods to sacrifice to Bana Devi—the goddess of the jungle and the adopted patron of rhino catchers.

With the gods appeased, we headed off into the tall grass mounted on a Hannibal-sized contingent of elephants. We were searching for a young adult female we had spotted earlier. Part of our research in Chitawan, supported by the Smithsonian, includes a census of the rhino population; thus, all of the rhinos in this

With jungle mynahs on its back, a greater one-horned rhinoceros munches through tall grass at Chitawan.

Photographs by William Thompson

area had been photographed, numbered, named and registered, so that identifying them proved easy. Within 40 minutes we located the female but she was nearly three kilometers, or two miles, away from our darting site, requiring us to escort her through a sea of elephant-high grass. We encircled the female rhino and like Pleistocene cowboys herded her gently to the darting site, a drive requiring about 45 minutes.

Once we reached the site, Dr. Sunder Shrestha, a young veterinarian from Kathmandu, climbed aboard an elephant and moved in to dart the rhino. The dart, propelled by a .22-caliber charge, contained an extremely potent derivative of morphine, known as M99, mixed with a bit of tranquilizer. This knockout cocktail enabled us to immobilize two-ton animals with a few drops. More important, the effects of the drug could be reversed immediately with an antidote if the respiration dropped below safe levels.

Armor-plated and fastened with rivets

The muffled report of the dart gun broke the morning silence and the dart, trailing a tail of bright red chenille, stuck into and protruded from the rhino's rump. The inch-thick hide, wide skin folds and rear skin tubercles of a greater one-horned rhinoceros convey an image of an armor-plated animal fastened together with rivets. No wonder that the needles we employ to pierce this hide and inject the dose are two inches long.

We had to wait about 15 minutes for the drug to take effect. Immobilization of rhinos has become fairly routine for us, as we have successfully captured more than 25 animals for research work. Still, the unpredictable often happens and, with the day's first capture, it did. As if driven to take one last chance at escape, the rhino summoned her dimming wits and charged the elephants in an attempt to flee into the thick forest beyond the wall of pachyderms. The elephants met her challenge and trumpeted loudly. The rhino panicked and swerved, desperately trying to outflank them. Quick-footed elephants, posted at the edge of the jungle for just such an event, contained the rhino like outside linebackers until larger ones joined up to reencircle the animal. Perhaps resigned to its fate, the rhino stopped in its three-toed tracks and grudgingly lay down.

Once the rhino was immobilized, we tested to make sure that all of the drug had been injected. A sharp kick delivered to the rhino's buttocks and the lack of any response convinced us that the rhino was out cold. We moved swiftly to cover the animal's eyes and plugged its ears with coils of cotton to keep it calm and resting peacefully. Six of us scrambled over the length and girth of the sleeping giant, measuring everything from horn length to length of tail. Then we collected a small sample of blood and tissue, which will later be analyzed in a U.S. lab, to determine the population genetics of Bardia's founder stock. We drew a bit more blood for looking at disease history in the population. Concurrently, we carefully monitored vital functions like respiration and body temperature to ensure that the rhino was breathing properly and not overheating. Our work done in ten minutes, it was time to let the road crew take over.

Assistant warden Ram Pritt Yadav and chief mechanic Khuber Gurung began the loading operation. The loader scooped out several cubic yards of earth next to the sleeping rhino and workers slid into the ditch a 4-meter-long wooden sledge, padded with straw-stuffed burlap. Twenty well-trained staff pushed the rhino onto the sledge. After she was roped in place, the front-end loader towed her to the river edge. We propped up her head with a pillow to keep it well above the waterline. The loader chugged across the stream, earthmover become tugboat. As we sloshed along beside the rhino, we reflected on the preparations it took to arrive at this stage.

Before moving 15,000 tons of rhinos to Bardia, we had done our homework. We had studied the vegetation and feeding ecology of wild herbivores in Bardia. In the year prior to relocation, we made two visits to Bardia to identify several release sites where we hoped rhinos would settle. Our field research in Chitawan revealed that the animals are remarkably sedentary. Provided with sufficient forage, shade, drinking water and wallow sites, rhinos behave like homebodies.

The relocation effort was one of the first field projects supervised by the recently created King Mahendra Trust for Nature Conservation, a nonprofit organization dedicated to preserving Nepal's natural heritage, with support from the World Wildlife Fund-U.S. The chairman of the trust, Prince Gyanendra, the younger brother of King Birendra and Nepal's leading conservationist, took an active role in putting the rhinos on the road to Bardia. Bureaucratic tangles unraveled quickly, thanks to the Prince's activities and encouragement. To allay the fears of senior and junior officers concerned by the possibility of a rhino mortality in transit, the Prince advised them to consider that "this is an experiment. Treat it as such. The goal of rhino conservation is worth the risks involved in capture and transport."

Indeed, risks abounded. The change in rhino ZIP Codes from Chitawan to Bardia would require fully conscious animals to remain crated up to 18 hours.

Hemanta Raj Mishra is administrator of the King Mahendra Trust in Kathmandu. Eric Dinerstein is a field ecologist who is studying rhinoceros under the Smithsonian/Nepal Terai Ecology Project.

Team works quickly on immobilized animal. To reduce stress, its eyes are covered and coils of cotton are tucked into ears. The man in plaid checks pulse, while men at right hold radio collar in readiness.

In the early morning, an assistant driver prepares to put wood-and-canvas saddle on his elephant.

Beginning of a 220-mile move to Bardia Reserve: a second crated rhino is lowered into a timber truck.

And once loaded in the trucks, the rhinos were in the hands of our truck drivers. Truck drivers throughout the world are of the same caste: tough, hardworking, independent in spirit. But we had no idea how drivers accustomed to hauling dead wood would take to hauling live loads. Nor could we be certain that the rhinos could handle the toss and tumble of the bumpy road to Bardia. To reduce stress on them, we chose to travel at night. Beyond these worries, we had to avoid dangerous river fords and be prepared to navigate around the stuck buses and trucks that often clog the dirt roads leading to Bardia.

Another concern was simply fitting a sleeping rhino into a crate. The front-end loader pushed the rhino-on-sledge to the edge of the crate. The sledge, connected by a strong torsion cable to a winch, was hauled into the open crate. We then closed the door of the crate and administered the antidote. Within a few minutes the rhino regained consciousness and its feet. The front-end loader then pulled the sledge from

Besides staff, most watchers are the villagers whose farmland adjoins the Royal Chitawan National Park.

the crate as the rhino stepped off it, and the door was fully lowered. Generally, this step was accompanied by the rhino trying to bust up the crate. Fashioned from strong planks of sal wood, the best and heaviest timber tree of Nepal, the crate absorbed the rhino's body blows.

One rhino in hand, we returned to the jungle to catch the next two. We captured another female and subadult male that day, immobilized them and roped them to sledges. Belligerent when awake and upright, they seemed more like rubber squeeze toys when immobilized and prone. With their bright pink underbellies and relatively tiny hooves, one might conclude that the evolution of rhinos occurred in bathtubs rather than on floodplains.

At the loading dock our efforts to keep the scene orderly proved futile. When the rhino was to be pushed into the crate, the crowd of onlookers swelled even more, with locals vying for a chance to touch the sedated jungle celebrity. While concerned about stress on the animal, we found it hard to argue with the logic of one villager who asserted: "The rhinos come into our fields and eat our crops and we do not retaliate. The least we can do is to be able to touch one." A few locals slipped through the army detachment and, immediately after laying a hand on the rhino, each touched his own forehead in blessing. We followed suit and it brought us good fortune: by dusk, with all of the trucks loaded and the rhinos postmarked for Bardia, we rolled out of camp, beginning our night-long westbound marathon.

Rhino habitat became rice paddies

As dawn approached, we traveled due west to the Karnali River, whose lush floodplains, forests and grasslands will be the home for these uprooted rhinos. The morning light revealed villages huddled by the roadside. The settlements looked as if they had appeared overnight, and in relative terms they had. Only 30 years ago the flat lowland jungles of Nepal, known as the Terai, supported high densities of rhinos, elephants, tigers, buffalo and other exotic megafauna, but very few humans. A deadly strain of malaria limited settlement in the Terai to a small group of natives —the Tharu—who were apparently resistant to the disease. By the early 1960s, a spraying campaign doused the Terai with DDT and freed Chitawan from malaria. A wave of poor hill tribesmen eagerly swept down to farm the flat arable land and convert prime rhino habitat to rice paddies.

One of the few jungles spared by land-hungry settlers was the Royal Bardia Reserve. While habitats were largely preserved, poaching decimated large ungulate populations. Under the careful stewardship of Nepal's Department of National Parks and Wildlife Conservation, the former hunting reserve was nursed back to health. After inauguration as a wildlife preserve in 1975, domestic grazing was stopped and poaching curtailed by the Nepalese Army. Bardia is now the gem of Nepal's National Park System, too isolated to be affected by human encroachment, well protected by the park staff and surrounded by sufficient buffer forests to absorb the impact of woodcutters. Clearly, Bardia was ripe for rhino reintroduction.

Once the rhinos were released there, the task of following them around fell to senior game scout Gagan Singh, a native of the area and a man who knows the reserve and its wildlife better than anyone. Although his formal education ended with the third grade, Gagan has amassed a PhD's worth of knowledge on the natural history of Bardia. He attends to all aspects of reserve management from building bridges, roads, guardposts and tree blinds to tracking tigers and wild elephants—on foot, of course. Gagan and

assistants now will spend their days tracking rhinos around the reserve.

We stopped one last time to drink tea and check the rhinos. At the edge of the jungle, cosmopolitan peacocks were calling "New Yawk! New Yawk!"—the familiar, if geographically inappropriate, cry of the Terai morning. Quickly, the rhinos had attracted a small crowd of Tharu villagers, unsure if the rough beasts slouched before them were elephants or illusions of the dawn's mist. Most Nepalis have never seen live rhinos but know them well from the marketplace: they are pictured on the back of every 100-rupee note. Rhino products figure prominently in local medicine and folklore. Topical application of rhino urine is said to cure ear infections and, taken internally, it cures asthma and tuberculosis. Rhino dung is smoked in a pipe to cure fever, and a powder from the ground-up horn is sold as an aphrodisiac in Hong Kong. Whether from good sense or the fear of stiff penalties, Nepali villagers seem uninterested in the horn but will pay good money for high-test urine.

At last, after crossing three rivers, bypassing two stuck trucks and braking for numerous herds of cows grazing along the highway, we reached Bardia and the release site. After 18 hours in the crate, the restrained rhinos might be ready to burst out of their chutes like Brahma bulls at a rodeo. Thinking ahead, we had brought along all of Bardia's domesticated elephants to keep order at the release site. We had forgotten, though, that Bardia's elephants had never seen a rhino before. The door from the first crate was opened and out rushed a female rhino. Roaring and honking, she charged straight at the elephants, galloping at full tilt for the Bardia state line. Scared out of their wits, the elephants trumpeted loudly and bolted for the trees, and for a few moments it was pachyderm pandemonium. Fortunately, the release site was a large open grassland and the drivers managed to halt their runaway steeds before they reached the forest edge, where surely both human and tree limbs would have been broken. The drivers guided their nervous elephants back to their stables to be tethered. Soon the inexperienced pachyderms would win sparring bouts with rhinos, but today Round One was awarded to the challenger from Chitawan.

The next animal to be released, a subadult male, trundled out, looking for something in his path to crush. Finding nowhere to vent his frustration, he

After successfully capturing a rhino, the party returns through the hazy morning to Smithsonian

loped off, emitting the peculiar huffing sounds rhinos make when running in retreat from danger. The last animal to be released for the day, a female, experienced no trauma and merely ambled out of the crate. With nostrils flared, she inhaled the sweetness of freedom. As she sniffed the new real estate, we hoped she would decide to go forth and multiply. (To encourage breeding in captivity, Prince Gyanendra recently gave two young female rhinos we had captured to the National Zoo in Washington, which already had an 11-year-old male.)

These three rhinos were eventually joined by ten other one-horned colonists. In late December, seven days after starting the capture operation, we left Chitawan with the last contingent of three rhinos. By now, word had spread through every village along our route about the contents of these curious timber trucks. In a country where few can afford radios and where television is limited to Kathmandu, word of mouth serves admirably as a low-tech, effective mode of communication. Villagers were already lining the east-west highway, euphoric after a day of celebrating King Birendra's birthday. So when the people saw the now-familiar timber trucks hauling giant crates roll by, they waved their Nepalese flags. Children ran after the trucks shouting, *"Gaida aayo! Gaida aayo!"* ("The rhinos are coming! The rhinos are coming!"), a fitting tribute to the passing-by of a national symbol.

The preservation of Nepal's religious shrines has drawn international support and popular acclaim from a devout nation of Hindus and Buddhists. It is up to conservationists to elevate the theme of restoration ecology, in which rhino relocation figures prominently, as a goal as important as the restoration of a temple or a monastery. There is one critical difference. Provided local expertise and sufficient funding, religious shrines can be re-created. Once the rhinos are gone, however, no amount of conjuring or massive expenditure of funds can ever return them to the wild.

During important Nepalese festivals people often carry religious objects from one temple to another. Our transplant of rhinos from Chitawan to Bardia was a similar procession, and next year eight more rhinos are slated to be shifted from one jungle shrine to another. For the greater one-horned rhinoceros, the road back from the brink of extinction, like that bumpy track to Bardia, is often slow and tortuous. At least in Nepal, the journey is well under way.

Research Camp in Sauraha, Chitawan. Coauthor Dinerstein is on long-tailed elephant sixth from left.

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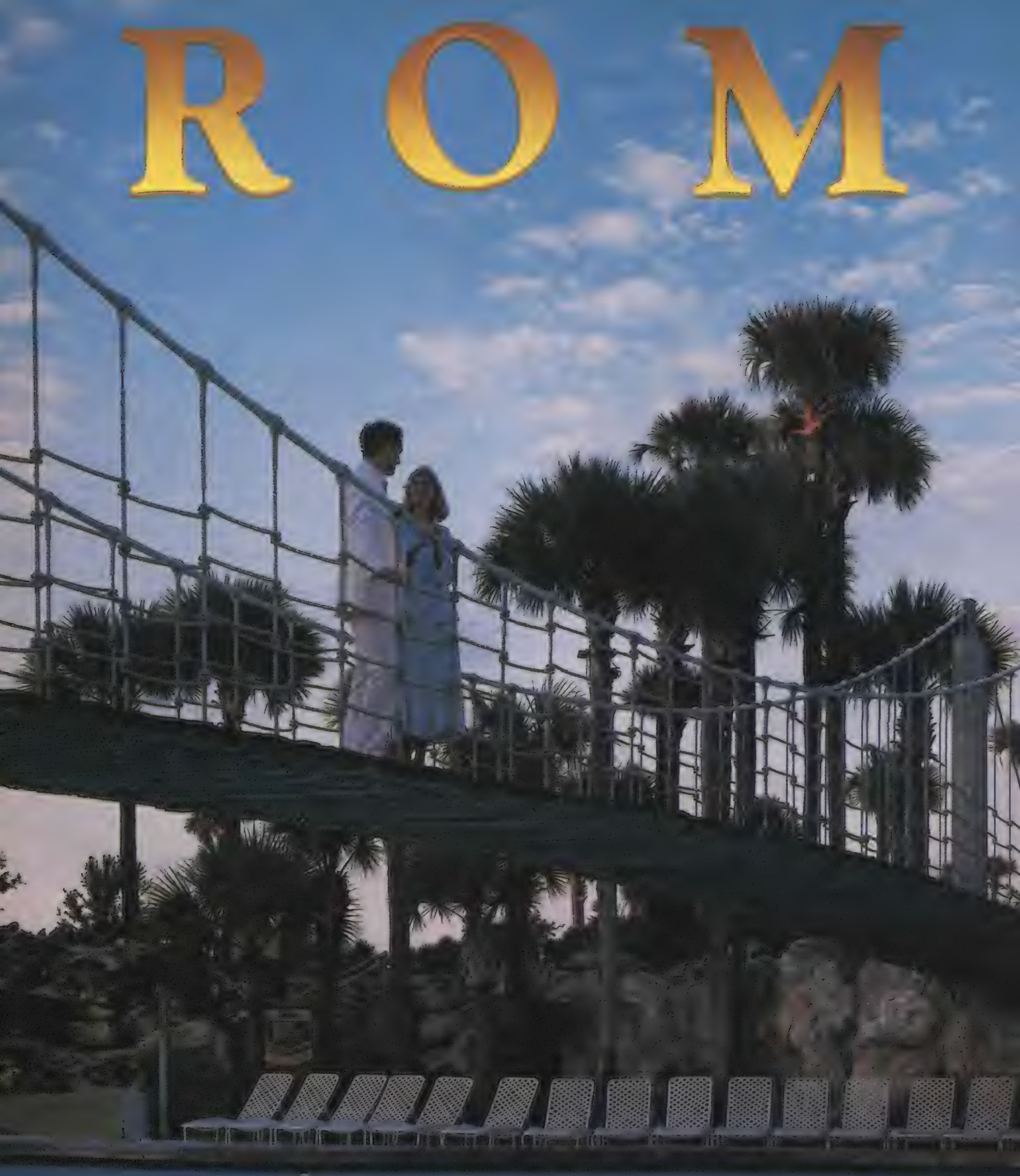

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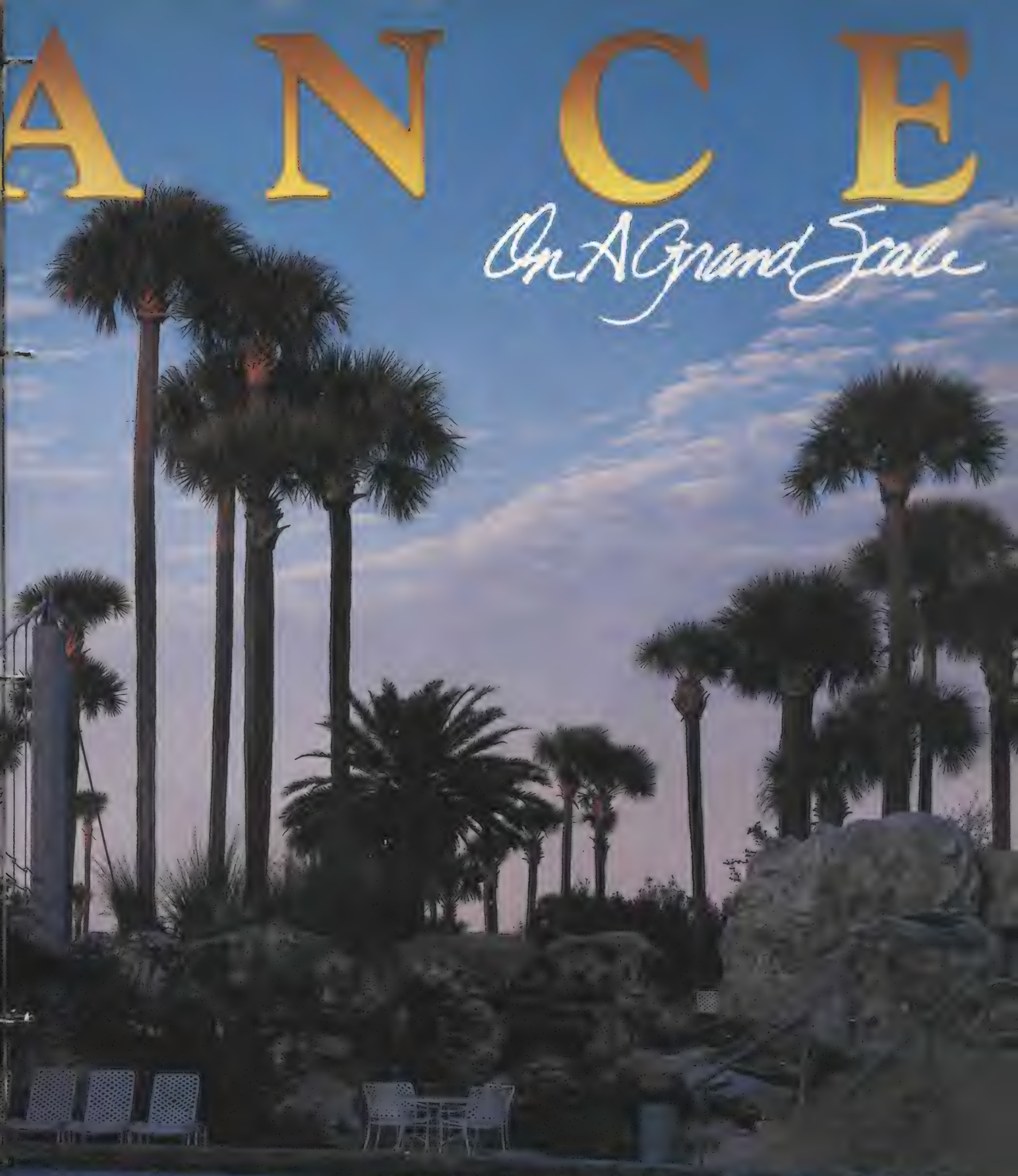

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By Timothy Foote

After more than two centuries, this may be Mr. Madison's year

But for reasons both fateful and frivolous, the Father of the Constitution is still a man hard to know, and harder to lionize

On the shelf of national memory where the early heroes stand, Washington stands tallest. The Father of his Country. The man who almost through an act of personal will kept us from losing the Revolution until we won it. We have a fair sense of him in flesh and blood, too—that careful farmer whose fields sloped to the Potomac, a husband with bad teeth, eternally married to hospitable yet frumpish Martha.

The same is true of Jefferson. The Apostle of Liberty. History's copywriter for the Declaration of Independence. A benign demagogue whose name is still invoked to sanctify almost anything liberals passionately believe in. Tall, freckled, philosophical, attractively feckless in his dress, he loved the fiddle, keeping lists, gardening at Monticello.

This year has dramatized a much-remarked historic irony, though. James Madison, the Virginian known as the Father of the Constitution, the man whom his friend Jefferson once called the "greatest man in the world," remains a comparative stranger to us.

This certainly ought to be Mr. Madison's Year. But the man's life was his politics, and even politically he is a curious figure, easy to admire, hard to lionize. It is clear, however, that Madison is the best one-man history lesson we have on the contrary priorities and passions that tormented the new Republic: how to work out the proper care and feeding of the world's first working democracy; how to preserve a stable Union and the evolving ideal of Liberty in a country angrily divided and full of slaves. Madison was the man who more than any other worked out the basic concept of balanced government that let the Union be born in the first place (SMITHSONIAN, July 1987). Then, his pen practically smoking with pragmatism and political insight, he dashed off 29 of the 85 Federalist Papers to help get the document ratified. Such achievements were only the beginning of a career that would include creating (pretty well single-handed) America's first purely political party, serving eight years as Jefferson's Secretary of State and two trying terms as the President of the United States.

Yet for most Americans today, the best-known fact of James Madison's life was his marriage to a fair, buxom widow named Dolley Payne Todd.

In a sense Madison wanted it that way. He was an excruciatingly shy man who addressed his father in letters all his life as "Honored Sir," and went to considerable lengths to see that—in life as in death—his private history would stay private. In 1783, at age 32, still a representative in the Continental Congress, he became engaged to pretty, 16-year-old Kitty Floyd, a New York politician's daughter. They exchanged miniature portraits (pp. 78, 79), but just when he was planning a journey to Princeton to get married, Kitty jilted him. Madison tried to scratch out all written record of the event. A surviving brief reference in a letter to his lifelong friend Jefferson bears the mark of Madison's modesty and introverted style. ". . . the necessity of my visiting . . . New Jersey no longer exists," he wrote. "It would be improper by this communication to send particular explanations, and perhaps needless to trouble you with them at any time."

Madison was, and still is, hopelessly upstaged by the people with whom he has to compete for a place in the hearts of his countrymen. Starting, of course, with Dolley herself. From the moment in 1794 when she enters the pages of history in a girlish note dashed off to her friend Eliza announcing that the "great little Mad-

Wearing characteristically somber dress and look, Madison sat for 1804 portrait by Gilbert Stuart.

Failed fiancée, Kitty Floyd, devastated James in 1783 by jilting him and returning his portrait (opposite).

ison has asked to be brought to see me this evening," Dolley was one of those figures who today would keep winding up on the cover of *People* magazine. She was an ex-Quaker, thrown out of her Meeting for being married to Madison outside the Society of Friends. She was an unabashed lover of parties. She "rouged" and wore amazing hats. If there had been T-shirts labeled BORN TO SHOP in the early 1800s, she would have bought one. In Washington, at a time when the United States was regarded by Europeans as a country of bumpkins, she swiftly became a world-class hostess. Just the sight of Mrs. Madison's stately décolletage at White House gatherings kept some ambassadors from regarding miasmal Washington as a hardship post.

She could even turn a disaster to good account. Everyone knows how, when the British took Washington in August 1814, at a time when Madison was riding hither and yon trying to find out what was happening, brave Dolley whisked the White House silver and a famous portrait of George Washington right out from under their invading noses. Americans still tend to remember the burning of the nation's capital mainly through Dolley's exploit.

Where image is concerned, vis-à-vis men like stalwart Washington and eloquent Jefferson, the fates were cruel to Madison. At least in the kind of quasi-caricature that usually creates a public image, he bore a striking resemblance to what teenagers now call a nerd. He was frail, and perhaps no more than five feet two. Dolley was five feet six and even in low shoes she seemed to tower over him. On first acquaintance, and always with strangers, Madison struck people as "a small man quite devoid of dignity." One visitor compared him to a country schoolmaster "in mourning for one of his pupils whom he had whipped to death." He dressed in black and he was so highminded, at least early on, that he lost an election because he refused to encourage the "corrupting influence of spirituous liquors" by doing what every other candidate did—serve strong drink at the polls.

Madison's voice could hardly be heard from a podium. Even at his own first Inaugural in 1809, he "trembled excessively" when he started to speak. Though often matchless for logic and lucidity, his prose rarely rose to anything like a verbal cadenza. One of his few quotable quotes was "If men were angels no government would be necessary," and even that lacked music.

Life can be very different for very small men. In 1775, as the Revolution loomed, Madison joined the local militia. But in youth he had suffered some sort of epilepsy, which made him a lifelong hypochondriac, prone to biliousness and fearful that he might die early. During the first military drill, feeling dizzy from the sun, he had to withdraw.

Friends amply attest to Madison's extraordinary warmth and graceful wit in private. A guest at Montpelier, his 3,000-acre family plantation in Virginia,

The author, who recently wrote about Rudyard Kipling, and the Hungarian Revolution of 1956, is a member of SMITHSONIAN*'s Board of Editors.*

Miniature, an engagement gift for Kitty, shows Madison, still shy and boyish as Congressman of 32.

Lifelong love, the charming and gregarious Dolley married him in 1794, became an adored First Lady.

after describing streams of anecdote and epigram with which for hours Madison regaled a party, added sadly, "And this entertaining, interesting and communicative personage, had a single stranger or indifferent person been present, would have been mute, cold and repulsive." Madison never did grow easy in a crowd. On the night of his first Inauguration, March 4, 1809, just before a state supper, as the resplendent Dolley was dealing with well-wishers, Madison confided to a society matron, "I would much rather be in bed."

Yet shyness and all, Madison had qualities that commanded attention. It wasn't just that he'd read everything (if need be in the original French, Greek, Latin or Hebrew). It was not even that he was a demon for work. He churned through Princeton in two years, working himself into a state of near exhaustion. Then, starting in 1772, he spent an extra term as a graduate student. He disdained life as a plantation owner, he told a friend, because of slavery. He was not religious enough for the ministry and he found the law too "coarse and dry." It was typical of him that in 1780, back in Montpelier and preparing to become his state's representative to the debt-ridden Continental Congress, he holed up for weeks, reading history and economics all day. The experts were wrong, he decided. The value of paper money did not, as they said, depend on how much of it was in circulation, but rather on public confidence in the issuing authority. Once in Philadelphia he urged the other state delegates to give Congress the power not just to *print* paper money but to tax the states to pay for the war.

Nothing useful came of it except that Madison, completely out of patience with states' rights, became an arch-nationalist. By 1787 he had taken the lead in trying to invest power in a refurbished national government under a new constitution. Given his own constitution, heroic may not be too strong a word to describe the months of study, letter writing and lobbying that Madison put into preparation for the Constitutional Convention and the Virginia Plan that provided its main agenda. In actual debate he showed, as another delegate put it, the "most correct knowledge of [the affairs of the United States] of any man in the Union." Always cogent, always to the point, he spoke more than 200 times. For four months of the Convention he took those famous notes of what happened, meticulously copying them each night, often so tired he could hardly make his pen move across the page.

During Presidency in 1814, British took Washington, burned many buildings including the White House.

What really set Madison apart, though, was the ability to take a problem in government, no matter how complicated, examine it in the light of history, experience, common sense and some idea of what might justly be done, and then, lucidly, even-handedly explain it better than anyone else could. The most appropriate compliment ever given him was wrung from one of his political enemies, Chief Justice John Marshall. If eloquence included the unadorned power of reasoned persuasion, Marshall wrote, Madison was the "most eloquent man I ever heard."

He was first noticed in 1776 as a 25-year-old delegate to the Virginia convention. When drafting a bill of rights, George Mason proposed the "fullest Toleration in the Exercise of Religion," but the young man from Orange County disagreed. Disestablishment was not enough, he held. Tolerance was not even enough. It implied that *some* religion or government was in a position to *be* tolerant. "All men are equally entitled to the full and free exercise of [religion] according to the dictates of Conscience," he wrote, and that ideal, clearly stated, and steadily applied, helped make liberty of conscience a substantive right in America. It also led to the Separation of Church and State clause, written by Madison, in the First Amendment.

The notion that there is safety in balanced numbers lay at the heart of Madison's political philosophy, as the dubious delegates at the 1787 Convention heard when Madison explained how a republic based on democratic principles with a strong federal government and a system of checks and balances could work (unlike past republics) in so vast and various a land as America. Today we tend to see democracy as an inevitable winner, virtuous and workable, despite its inefficiency the best system ever conceived to insure order and to provide for the peaceful transfer of power, while keeping tyranny at bay. In 1787 pure democracy was in the doghouse. The few previous attempts at self-government had proved drastically unstable, inclined to give way to the tyranny of the many or the usurping few. Madison offered an alternative.

As a child of the Age of Reason, Madison believed passionately that men—by which he meant property-owning, job-holding men—can govern themselves. He reckoned America was the place to prove it once and for all. As a practical student of history and human nature, Madison knew that men are unreliable. "It is in vain," he wrote, "to say that enlightened statesmen will be able to adjust their interests. Enlightened statesmen will not always be at the helm." Political man is given to forming factions. But why not build a stable government out of the very forces that threaten stability? In his celebrated phrase: "Ambition must be made to counteract ambition."

Given enough free play among the conflicting political factions, the forces of self-interest would bal-

The conflict, fought mainly over impressment of U.S. seamen, came to be called "Mr. Madison's War."

ance out. Under such a Federal system, though, to get anything done, the government should have a considerable amount of power.

And so, with notable help from Madison, it did. He worked for a central government that would energetically exercise its powers. Levying taxes, creating credit and a sound currency, paying off the war debt, dealing with national defense, it would establish the United States as a legitimate, sovereign nation. "Let the national government be armed with positive and complete authority," he had written, an attitude that frightened the small states half to death. The real danger to the Republic, he said, would be the interference with the Executive by the Congress.

But then an astonishing change took place in Madison. In one of the great political turnabouts in American history, this moderate man, this apostle of federal power, began to attack federal power and the very men who had helped him bring the Constitution into existence, establishing the new government. He began to fight their policies tooth and nail. The government's plans to do such things as create an army and a navy and establish a national bank, he insisted, were contrary to the Constitution, put forward by "monarchists" and "usurpers" merely to get more power for themselves and the "monied interests." To foil their plots, he helped create something he had always said he hated, a purely partisan political organization—America's first honest-to-God political party.

States' rights and strict construction

"The Republican party as it may be termed," Madison said, describing the new opposition, which was originally called "Mr. Madison's Party." Why? Because it would be based on austere republican standards and policies. These Republicans were to be for a largely agrarian economy. Low levels of federal spending. Almost no taxes and therefore almost no army or navy. States' rights. Strict construction as regards the Constitution. A government, in short, that would show itself best by governing least.

Madison apologists insist that he was only being consistent. He had feared that one faction would dominate the government and when, despite all those checks and balances, the city-living merchants, incipient monarchists and stockjobbers swiftly did so, he was duty-bound to create a counterforce. Others say that he read history wrong, that the Union grew strong and the country prospered for the most part because the very machinery of government that Republicans preached against kept on working.

Much of the Republican platform has a familiar Jeffersonian ring to it and wound up as part of what became "Jeffersonian democracy." In setting up the new party Madison was clearly furthering the political ambitions of his lifelong friend Thomas Jefferson.

Jefferson was the star of the duo, of course. He was also Madison's French connection, something that in the long run proved a source of public woe. From 1785 until 1789, while Madison was wrestling with the Continental Congress and the Constitution, Jefferson was the American Minister in Paris. He sent Madison news, books, new gadgets like phosphorescent matches that had to be kept in a vacuum until they were ignited. Madison filled him in about politics and the Virginia crops, and sometimes measured a weasel or possum, sending the dimensions to Paris so Jefferson could refute theories of the great French naturalist Buffon, who insisted that North American animals were smaller than their French counterparts.

Initially the two men disagreed about federal power. To Madison, power was essential to republican government. But Jefferson had spent time in a repres-

Little Madison, left, and tall Jefferson were savagely lampooned for cutting off American shipping with the Embargo Act. Passed in 1807 during war between France and Britain, it was thought to favor French, as Madison did. Here he says, "France wants an embargo & must have it."

sive, tradition-bound monarchy and then watched the start of a revolution which, characteristically, he judged more on the basis of its words (resounding and egalitarian) than its deeds (often bloody and self-defeating). To him, government power was tyranny.

After Jefferson returned to America he became Washington's Secretary of State. He got into a bitter, losing contest with the gifted Secretary of the Treasury, Alexander Hamilton, over who would be Washington's right-hand man. It was about then that the split between Madison and his former Federalist allies began, and it occurred over Hamilton's extensive plans for strengthening the national government and the nation's credit. Madison called Hamilton's blueprint for a national bank unconstitutional. He attacked a plan for assuming state war debts as unfair.

As the fight went on it was exacerbated by the Republicans, who whipped up a popular frenzy in support of Revolutionary France, as well as by French efforts to meddle in American affairs in hopes of drawing the country into an alliance against England. All through the 1790s charges of treason, calumny and "apostasy from the principles of our Revolution" filled the air and the newspapers. When Washington made neutrality America's policy, Madison swallowed hard. Washington he could not attack, but he lumped the Anglophile Hamilton with the British as an enemy of France, declaring that France's enemies "are in fact the enemies of human nature."

In retrospect, charges that President John Adams and Hamilton were planning to scrap the Constitution, betray the Republic and impose a monarchy do not seem even faintly justified. But a time came in 1798 when Adams, outraged at French intrigue and Republican vituperation, signed into law the notorious Alien and Sedition Acts, outlawing "false, scandalous and malicious writing against the government."

Madison and Jefferson, shocked at this threat to freedom of speech, secretly collaborated on a counterattack, respectively writing the Virginia and Kentucky Resolutions, which declared that individual states had the right to reject federal laws they saw as unconstitutional. The Acts soon expired or were repealed.

By 1801 the Republican party had brought Jefferson to power as President, with Madison his Secretary of State. (His staff consisted of eight clerks and a messenger, but at the time the whole United States government numbered only 130 men.) And now, apparently still mesmerized by Jefferson's *faiblesse* for all things French, and full of anger against the British navy, which was blockading the continent and kidnapping American seamen, Madison's judgment failed him. He got it into his head that England could be controlled through economic sanctions. As Secretary of State, he railed against the British and finally, through the Embargo Act of 1807, the whole of American shipping was locked up, partly as economic punishment against Britain, partly to keep the nation out of war. America's economy promptly sank, and in 1812, as President, Madison had to go to war anyway.

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Slavery, illustrated by low-key watercolor of female hands hoeing while languid overseer smokes, was the tragic irony of Madison's life. He believed in liberty but had slaves himself; sought ways to achieve general emancipation but saw that no national union could be formed without slave-owning states.

He wasn't any kind of a war leader. When he called for conscription, Congress, well drilled in Republican principles, jeered and refused, with shouts of "tyranny." Fortunately, the British were fighting a far-flung war with Napoleon, a real tyrant, and when they beat him in 1814, they had no need to stop American ships—or fight the Americans a moment longer.

Madison was never much for admitting mistakes, but what politician is? He now gave some evidence, though, of having absorbed some highly unrepublican truths. "The pacific character of . . . political institutions [cannot] exempt them from . . . strife," he announced, backtracking to urge that Congress create an adequate regular navy and army. After all, he noted "a certain degree of preparation for war . . . affords also the best security, for the continuance of peace." He also recommended a national bank.

When Madison finally laid down the burden of the Presidency, he was 66. He had spent some 36 years as a public servant. One likes to think of him back at Montpelier, settling into his book- and statue-filled living room, surrounded by Gilbert Stuart portraits. Or outside, engulfed by Virginia tobacco fields and horses, trying out different strains of wheat, perhaps measuring weasels again, riding over to talk with Jefferson, entertaining friends and foreign visitors.

Montpelier was off the beaten track, and after his death it went out of the family, to be rebuilt almost beyond recognition. But for now, guests kept turning up. Men of the world commented on the fineness of the wine cellar as well as Madison's flow of anecdote, for age and retirement seemed to have softened the edge of his reserve, and Dolley loved company. Sometimes there were 90 for dinner. Once, when a guest remarked that they must be eating him out of house and home, the frugal Madison allowed that the human guests' horses were eating him out of house and hay.

As President, Madison made $25,000 a year. He had never been able to save anything, at least in part because he kept having to settle the gambling debts of Dolley's scapegrace son, Payne, whom she referred to as "precious Payne," though Madison tried to keep things secret to spare her anguish. In all, it turned out, precious Payne had cost him $40,000 in bad debts. (In 1987 currency, that is close to $400,000.)

Much of Madison's living had always come from Montpelier. In 1818, recently retired, he found tobacco prices down and like many a farmer then and now, he watched himself getting further and further in the hole. Toward the end of his life Madison was barely keeping afloat by selling off bits of his plantation—and more than a few slaves.

He claimed he always asked the slaves' permission, but such niceties were not much help. For Madison, slavery had to be a source of appalling political irony. At the Constitutional Convention he had not minced words with fellow delegates about what issue really divided them—it was not shipping versus agriculture, or North versus South, or even the federal government versus states' rights—it was slavery.

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Greatest friend, Jefferson, encouraged Madison's affection for Republicanism and all things French.

As early as 1783, with characteristic clarity, he had stated the cruel contradiction implicit in his and the American position. He was about to quit Philadelphia when he realized that he would have to sell his slave Billey, who had been with him in the North for years. "I am persuaded," he wrote his father back at Montpelier, "his mind is too thoroughly tainted to be a fit companion for fellow slaves in Virginia. . . . I do not expect to get near the worth of him; but cannot think of punishing him by transportation merely for coveting that liberty . . . which we . . . have proclaimed so often to be the right, & worthy the pursuit, of every human being."

Then and later, though, his political priorities were clear. If America was to become the living proof that men could govern themselves, the Union came first. Once it was soundly established, he persuaded himself —or said he had, anyway—slavery might be made to wither away, gradually and peaceably.

To help keep the Union stable, at least through its first years, the Convention had declared (Article I, Section 9) that the federal government would have no power to prohibit the slave trade until 1808. When that date came around, Madison was about to be President, but a national abolition movement hardly existed. Protection of private property continued to be one of the sacred guarantees of individual liberty.

Once back in Virginia, however, the ex-President began to ponder some highly Madisonian theories. If it were not to ruin the country, or sunder the Union, he said, emancipation would have to involve adequate recompense to the freed slaves' owners and the consent of both slave and master. Madison's idea for purchasing their freedom was to sell off by Act of Congress 200 million acres of the nation's undeveloped western land at $3 per acre. This would be legal, fair and probably constitutional, he thought.

He did not think for a minute that most of the emancipated slaves would be able to settle in the states where they had once been enslaved or, for that matter, anywhere in the United States. Even if freed, he said, they would suffer from a "degrading privation of equal rights political or social," and must therefore "be always dissatisfied with their condition."

He joined, and gave financial support to, the new American Colonization Society, whose aim was to train freed slaves in educational camps in Maryland, and settle them on land the society had bought on the west coast of Africa and given the hopeful name Liberia.

Gradualism led him to curious and unfortunate policies. Seeing that the economic and political disruption would be great (if not insurmountable) in areas of heavy slave concentration, he preached the need to plant crops that were not as slave-intensive as tobacco, especially cotton. At Montpelier he tried switching to wheat or corn, but bugs and frost and fluctuations of the market kept him from finding a steady cash crop. Ultimately, the Father of the Constitution had to face the fact that he could not free even his own slaves, as he had planned to do at his death, without leaving Dolley in penury.

Nullification as a "rightful remedy"

By the 1830s, Southerners were hotly insisting that individual states had the right of nullification. Madison and Jefferson's memorable phrases from the 1798 Virginia and Kentucky Resolutions came back to haunt Madison, especially the words "where powers are assumed [by the federal government] which have not been delegated, a nullification of the act is a rightful remedy."

Something of Madison's state of mind was apparent to the pro-abolitionist journalist Harriet Martineau when she visited Madison in 1835, the year before his death. She left an indelible portrait of him at 84, "his little person wrapped in a black, silk gown," crippled by rheumatism (Dolley had to serve as his editor and secretary), deaf in one ear and going blind. Though their conversation ranged widely, it turned again and again to slavery, about which Madison seemed "to be

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In portrait by Mathew Brady, done shortly before she died in 1849, Dolley bravely wore false black curls.

in despair." Officially, to be sure, he clung to the hope of the African colonization plan. "How such a mind as his could derive any alleviation to its anxiety from that source," Martineau noted in her journal, "is surprising." According to her estimate, the facts were that in 18 years the Colonization Society had succeeded in resettling just 3,000 ex-slaves as freemen in Africa, at a time when the slave population in America was growing by 60,000 per year.

Still, unless one looks at Madison with the self-righteous outrage that the present generation uses to judge the past, it is hard to blame him in his old age for not being more openly hardheaded about a problem for which there *was* no peaceful or reasonable solution. The very thing that Madison had originally feared—had, indeed, fine-tuned the Constitution to avoid—now seemed unavoidable: shattering confrontation between two major factions, each ready to rend the Union to achieve its aims. Before he died, in "Advice to my Country," Madison did speak out. His words seem equivocal, though. The Union of the states, he wrote, must be cherished and perpetuated: "Let the open enemy to it be regarded as a Pandora with her box opened; and the disguised one, as the Serpent creeping with his deadly wiles into Paradise."

All this makes for a rather melancholy last act. It also tends to revive a mean suspicion, memorably asserted in a dismissive remark by economic historian Charles A. Beard: "Jeffersonian Democracy simply meant the possession of the federal government by the agrarian masses led by an aristocracy of slave-owning planters." Thomas Jefferson had once boasted that the "cultivators of the earth" are the chosen of God, "whose breasts he has made his peculiar deposit for substantial and genuine virtue." By contrast, the wage slaves of the city were mobs who "add just so much to the support of pure government, as sores do to the strength of the human body."

By 1835, from any point of view, both these judgments were loaded with almost limitless, and unattractive, irony. In the perspective of the approaching Civil War, Madison as an acolyte to Jeffersonian virtue—strict construction, disarmament and a weak federal government—does not stir much admiration. But the Madison of the early days, the Madison who realistically sought, pretty much at any cost, a strong, stable Union, is still some kind of hero.

In the 1850s, abolitionists, savagely attacking Madison's handiwork, blamed the continued existence of slavery on that "most cunningly-devised and wicked compact," the Constitution. On the Fourth of July, 1854, having called it "A Covenant with Death and an Agreement with Hell," William Lloyd Garrison actually set fire to a copy of the Constitution, shouting "So perish all compromises with tyranny!"

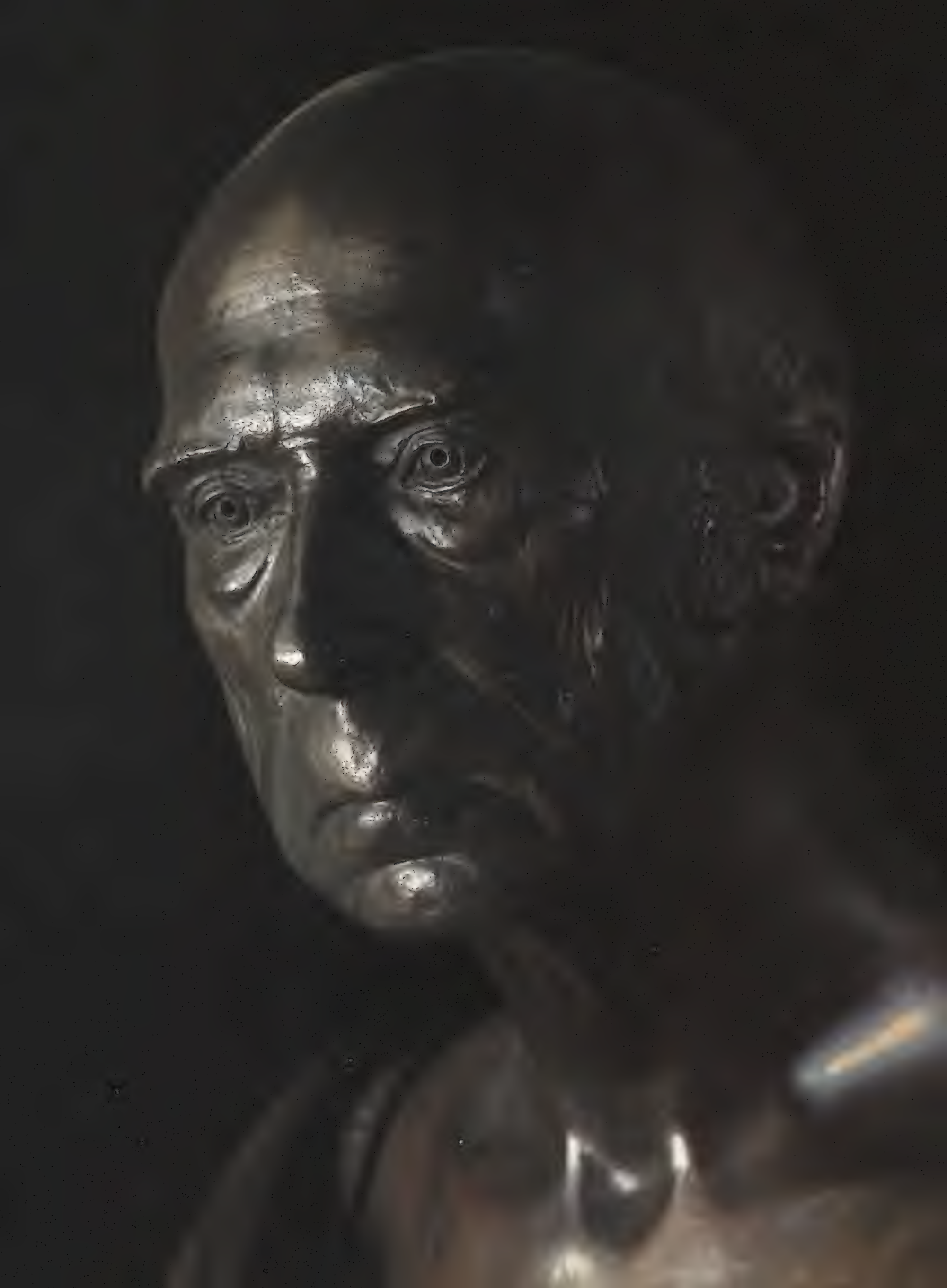
Yet if hope lay anywhere, it lay precisely in the Constitution, without which there would have been no Union, and no force to command change in the name of the nation. It was not until the 1860s that the federal government, backed by the industrial power Jefferson and Madison deplored so long, had the strength to try the issue and prevail. This was what Madison had wanted—not war, of course, but a Union that would grow strong and do the work of democracy.

Neither Dolley nor Madison lived to see it happen, though Dolley lived on until 1849, the year of the California Gold Rush.

The last survivor of the Constitutional Convention died on June 28, 1836. He was taking breakfast in bed, attended by his niece. Noticing that he had trouble swallowing, she asked "What's wrong, Uncle?"

"Nothing more than a change of mind," the old man replied, gracefully creating a kind of political epitaph. Then he died "as quietly," it was said, "as the snuff of a candle goes out."

Stately head of Madison in old age conveys a monumental quality that he did not possess earlier.



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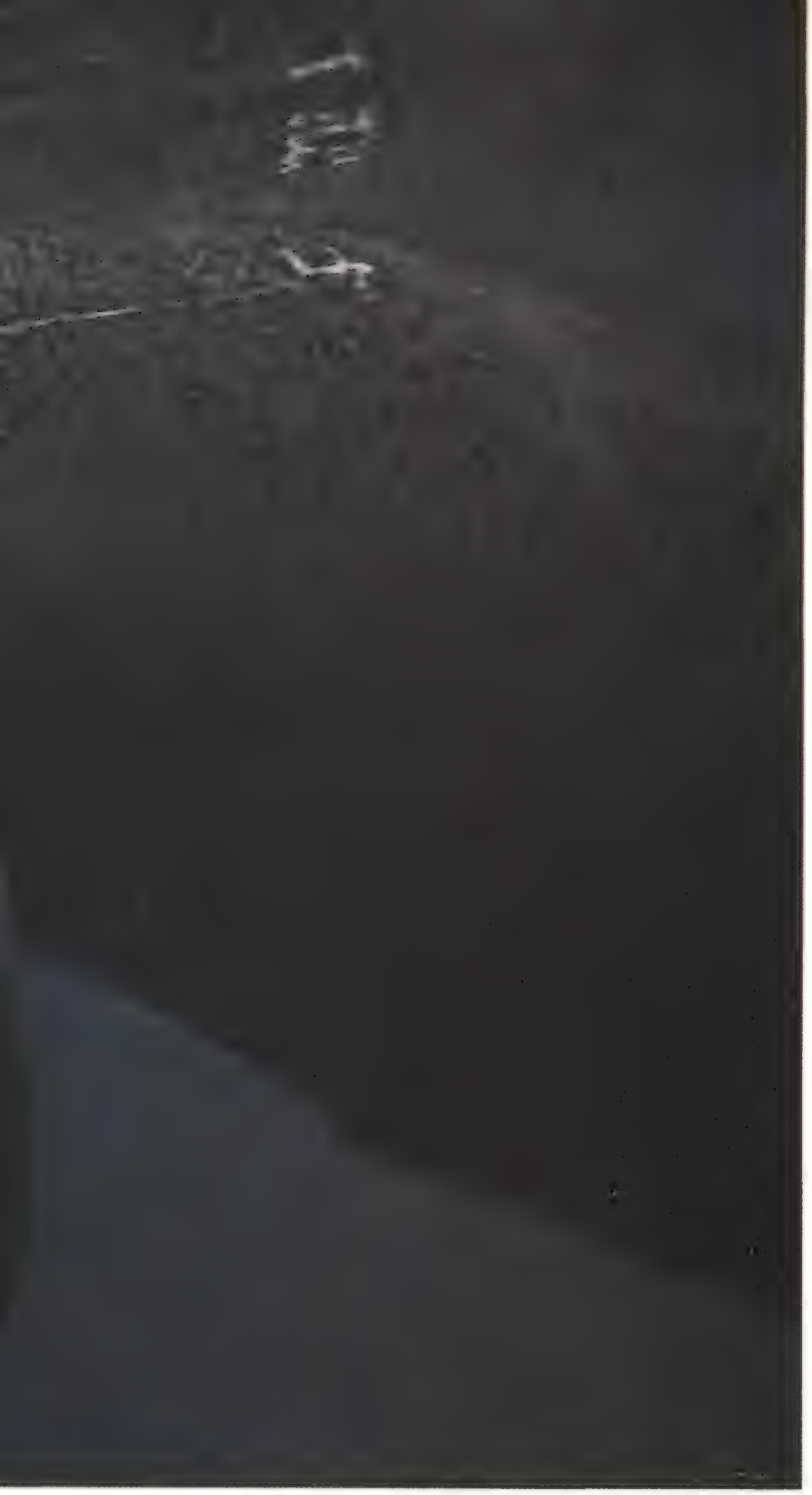
Graduate student Barbara Bernier makes a quick examination of young manatee in Homosassa Springs.

By John P. Wiley jr.

Manatees, like their siren namesakes, lure us to the deep

These placid grazers spend winters in the clear waters of Florida springs; now human beings are gathering, too, for some interspecies contact



The animal is one of two born in captivity at the Miami Seaquarium and later transferred to the wild.

Human beings just cannot get enough of large marine mammals. They ride boats out in the open ocean to see, even to touch, great whales. They kayak among sea lions in the Sea of Cortés and pay to swim with dolphins in Florida pools. They flock to seaquariums to watch killer whales do simple tricks.

This affection extends to the most phlegmatic, least playful of all our aquatic cousins, the manatees. Killed for food within living memory in this country and still killed for the table elsewhere, these 1,000-pound vegetarians now face the additional, if milder, threat of being loved to distraction. For reasons we will get to in a moment, manatees often congregate in clear water during the winter months, and more and more divers, photographers, naturalists and just plain tourists are congregating to see them. They are as irresistibly attractive as the mythological sirens for whom their taxonomic order is named.

Despite being run over by boats (biologists identify individuals by the patterns of propeller-blade scars on their backs), being crushed in canal locks or caught in fishing gear, getting sick during cold snaps or being poisoned in red tides (and occasionally being poached or wantonly slain), perhaps 1,200 manatees continue to roam the coasts, shallow, slow-flowing rivers and springs of Florida. They are tropical animals at the northern limit of their range, however, and have had to adapt to the chill and even occasional frost of winter. Some have learned to gather around the warm-water discharges of power plants, but many follow the older practice of migrating up rivers to springs where water at a constant 72 degrees F comes out of the bottom. It is to these springs, where the water is clear and the visibility excellent, that divers come from November to March each year.

Divers wait outside the line

Twenty of the manatees' winter haunts are now sanctuaries, where boat speeds are curtailed. Two of the most famous are the Kings Bay area, at the head of the Crystal River near Florida's Gulf Coast, and Blue Spring, on the Saint Johns River inland from the Atlantic Coast. These include a refuge—an area in which no boats, swimmers or divers are allowed. Visitors wait outside the line, rewarded often enough by animals that choose to leave the protected waters.

The rules of contact say you cannot touch a manatee unless it touches you first. Some, often the younger ones, will swim right up to a quiet diver and give what can only be described as a kiss. Douglas Faulkner, who took the pictures on these pages, says it is common for one to nuzzle him under the chin while he is trying to photograph another. "Often," he says, "when I have run through a roll of film, the manatee I have photographed will follow me back to the boat and wait." If too much time passes, the animal will give up and swim away. This poses a dilemma, for the rules say a photographer shall not follow a manatee. But there are pleasant surprises. Faulkner describes one moment of temptation, concluding, "But before I could invade my friend's personal space, he invaded mine with a nudge at my side."

The worry about divers is that if they disturb the manatees too much, the animals will suffer. They need to stay in the warm water of the sanctuaries if they are to survive the winter. Animals driven away by too

Photographs by Douglas Faulkner

much attention may die of pneumonia or hypothermia. Even those that stay may weaken if interrupted too often during their eight hours of daily feeding.

As difficult as conditions may now be for manatees, they were considerably worse in the past. Their meat tastes like veal, and because they're so docile they are easily killed. They have always been hunted, first by Indians and then by Europeans. When Columbus discovered America, the West Indian manatee—the species that includes those found in Florida—ranged from Mexico to northeast Brazil, including all the larger islands of the Caribbean. It still does, but in numbers so greatly reduced that it is endangered everywhere. Perhaps a hundred hang on in Puerto Rico, along the south shore and around the Fajardo River. Smaller numbers survive in Jamaica and the Dominican Republic. The situation in Cuba is not known.

Related species are equally imperiled. The freshwater manatee of the Amazon is still hunted, as is the manatee of West African rivers. The dugong of Asia is still found along the northern coast of Australia, the larger islands of Indonesia, the Asian mainland and East Africa, but is in rapid decline. All, however, have done better than the Steller's sea cow, by far the largest member of the order. Named for a German naturalist on the Bering expedition that discovered it in 1741, the Steller's sea cow was hunted into extinction just 27 years later (SMITHSONIAN, January 1973).

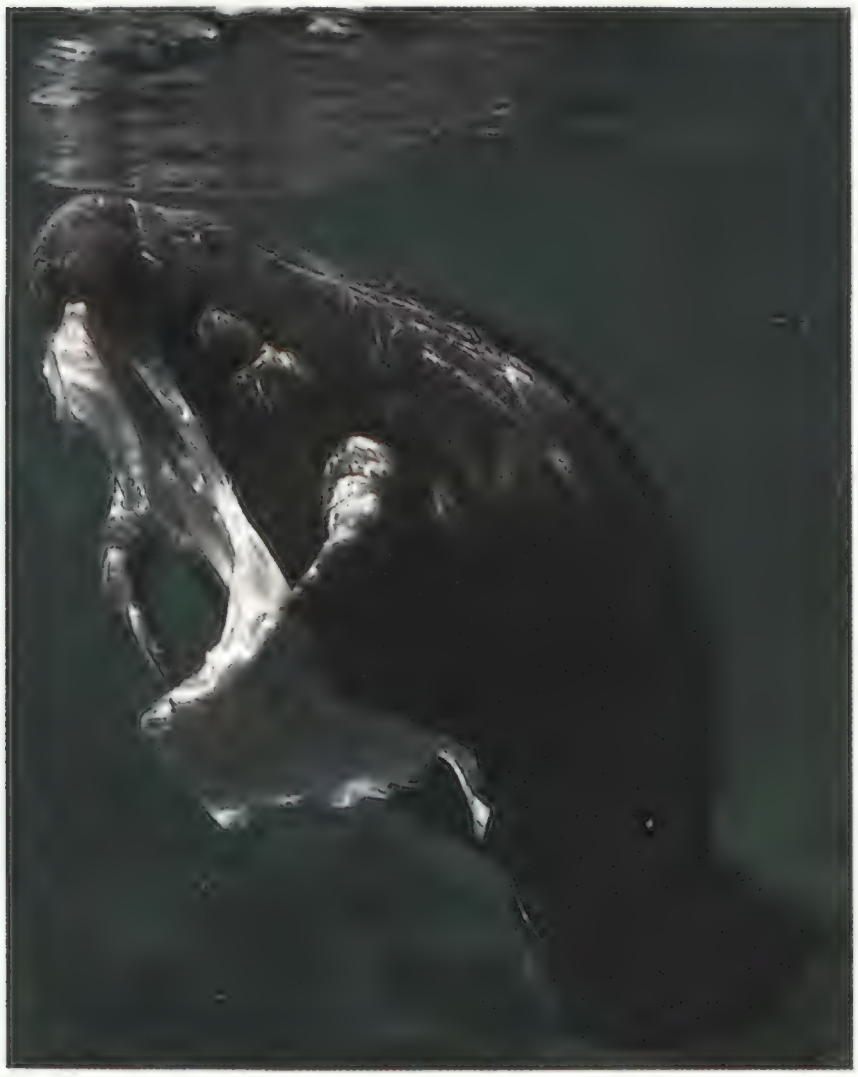
More recently, biologists have tried to save West Indian manatees by making them useful to humans. There have been attempts to raise them for meat and use them to keep canals and navigation channels clear of aquatic vegetation, especially in Guyana (SMITHSONIAN, December 1974). Neither plan has yet proved practical; we know so little about this seagoing kin of the elephant. For now, we're left with a third choice—loving the animal for its easygoing self.

A mother and calf nuzzle affectionately; young nurse for several years, even after a sibling is born.

Juvenile chews on an anchor rope. Some think they do this for the same reason people use dental floss.

Another youngster plays with a shirt he found on the bottom. There is some danger he will swallow it.

Seen from afar as mother and child or shipwrecked survivors, the animals also inspired tales of mermaids.



A hand reaches down as a manatee rises toward surface to breathe, symbolic perhaps of interspecies contact.

Children play with 12-foot female. Rules of contact say manatee must touch them before they touch her.

Animals that are harassed may leave the warm water of the spring and sicken and die in colder places.

Once rapport is established, a manatee may roll over on its back, allowing diver to scratch its stomach.

This youngster, one of perhaps only 1,200 left in Florida, shows no fear as he contemplates the camera.

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By Junius Ellis

At witty Caltech, pranks aren't purely a laughing matter

This tiny college is so serious about teaching and research in the basic sciences that even its campus antics have a scholarly slant

While other students look on, a Caltecher swings from contraptions rigged up in courtyard of a dormitory.

In the center of the Caltech campus in Pasadena is a vest-pocket park that covers the foundations of Throop Polytechnic Institute, the school's homeplace until the aged building fell victim to the big earthquake of 1971. In this hushed, lushly landscaped setting, flanked by Spanish Mission-style arcades, it's easy to imagine the hum of deep thinkers in harness, tapping on keyboards, scribbling in notebooks, slam dunking unwieldy equations into trash baskets. Large universities often boast of having a couple of Nobel Prize winners among their faculty and alumni. Tiny California Institute of Technology can claim 20 in the sciences since the early 1920s, when this former vocational school assumed its current name and set out to become the best little research center in America.

The dispatch with which it achieved that goal, largely by luring brains and contributions from back East, has been hailed as one of the great coups of academic empire building. For example, it was at Caltech during the 1930s that physicist Carl Anderson discovered the positron, the electron's positively charged counterparticle; that chemist Linus Pauling unraveled the chemical threads that stitch molecules together; that biologist Thomas Hunt Morgan probed the relationship of chromosomes to heredity; that visiting genius Albert Einstein abandoned his concept of a static cosmos and endorsed the expanding Universe, a model pioneered by astronomer Edwin Hubble.

Along the way, Caltech's stewards rarely succumbed to temptations to equate better with bigger. They built an international reputation on the strength, more than the scope, of research in such basic sciences as physics, astronomy, chemistry, biology, geology—and their applications in aeronautics, electronics, bioengineering and oil exploration. Even today the privately endowed school has just 830 undergraduates, 1,000 graduate students and 275 professors, making it roughly one-fifth the size of its longtime rival, the Massachusetts Institute of Technology. Men outnumber women students six to one, prompting campus guidebook author Lisa Birnbach to complain that Caltech is "so hard up for women it must recruit them like Big Ten universities romance star quarterbacks."

The heady intimacy of this mostly male preserve precludes homecoming queens. (The school's football team, which includes janitors, grad students and one 50-year-old professor, plays such lackluster opponents as the Pasadena Police and the San Fernando Valley Freelancers.) Instead, Caltech has developed a collegiate counterculture that deplores decorum and applauds feats of witty tomfoolery. To celebrate the 1979 centennial of Einstein's birth, former president Marvin L. Goldberger, a physicist who has taken over as director of the Institute for Advanced Studies at Princeton, donned a pith helmet and rode across campus on an elephant. The stunt was inspired by an Einstein one-liner likening college administrators to the hidebound behemoths. Actually, Caltech's administrators have been anything but hidebound. "I preside over a faculty of 275 anarchists," Goldberger used

Color photographs by Vince Streano

In risky quest for clue on Ditch Day, student rappels toward message taped on outside of Millikan Library.

As part of annual spring rite, undergraduates must collect clues needed to solve mostly scientific problems.

Astronomer George Ellery Hale (left), chemist Arthur Noyes, physicist Robert Millikan put school on map.

to say. "My job is to select the best people, give them the best facilities and stand aside." Goldberger's successor, Thomas E. Everhart, an eminent electronics engineer who formerly was Chancellor of the University of Illinois, shares that view but believes Caltech has what he calls "a special mission"—"to set a standard for the nation in excellence."

The institution's students are among the brightest anywhere. Two-thirds of the undergraduates have scored a perfect 800 on the math achievement tests of the college entrance exams. Caltech leads the nation in the proportion of graduates—39 percent on average—who later earn a PhD in the sciences. Indeed, Caltechers may well be the original nerds, a 1960s stereotype of intellectually precocious but socially inept adolescents that's reinforced by the student body's dearth of women. Long after Pasadena's bars and discos have called it a night, Caltech students can be found hunched over their desks and lab tables. So few rise regularly before late morning that the dorms long ago stopped serving breakfast, though some offer bacon and eggs and pancakes at lunchtime.

Not all of this nocturnal noodling is purely academic. During the 1984 Rose Bowl game, a group of students electronically commandeered the scoreboard with UCLA leading 38 to 9 over Illinois. Suddenly, the score read Caltech 38, MIT 9—a message relayed via radio from a remote computer to a smaller one implanted by moonlight in the board's circuitry. And each spring seniors can be heard hammering and soldering the night away in preparation for something called Ditch Day, an annual tournament of ruses that has made Caltech the powerhouse of college pranks.

Outwitting "stacks" to earn rewards

The May rite began in the 1930s, when seniors would hastily barricade their rooms with crude stacks of furniture against meddlesome underclassmen before ditching classes en masse to spend a day at the beach. Today tradition requires seniors to leave campus for nine hours, and those original stacks buttressed with two-by-fours have evolved into fiendishly clever defenses designed to taunt as well as to thwart would-be intruders. Underclassmen in turn are honor-bound to outwit—not overpower—a senior's "stack" before entering the room to claim the booze and sweets usually left as rewards.

In one instance several years ago, a senior returned to find his room still "sealed" by the physics problem taped to the door. The solution had eluded all comers including Richard Feynman, a Nobel laureate also renowned for his lock-picking escapades as a young physicist assigned to the atom-bomb-building Manhattan Project. In another, students quickly defeated

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Foundation of the well-dressed bath—a Kohler console table—draped in stone, brass and vitrified clay. The console shown here in black marble with IV Georges Brass™ faucet, matching legs and basin in Tender™ Grey. The wall mirror, one in a line of coordinating bath accessories. See the Yellow Pages for a Kohler Registered Showroom, or send $3 for a catalog to Kohler Co., Department AR9, Kohler, Wisconsin 53044.

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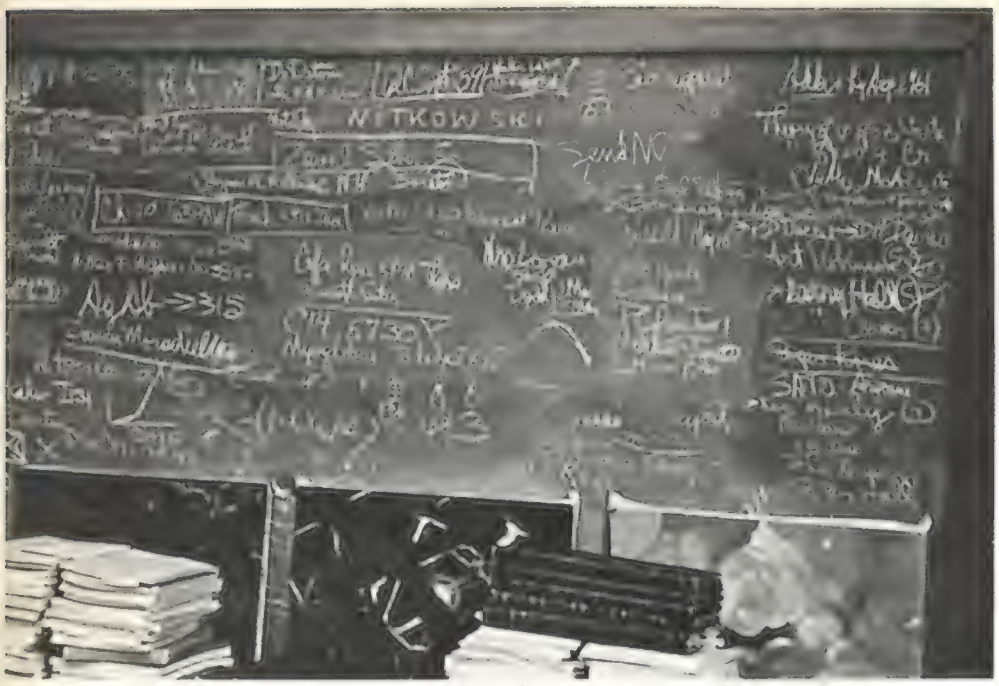
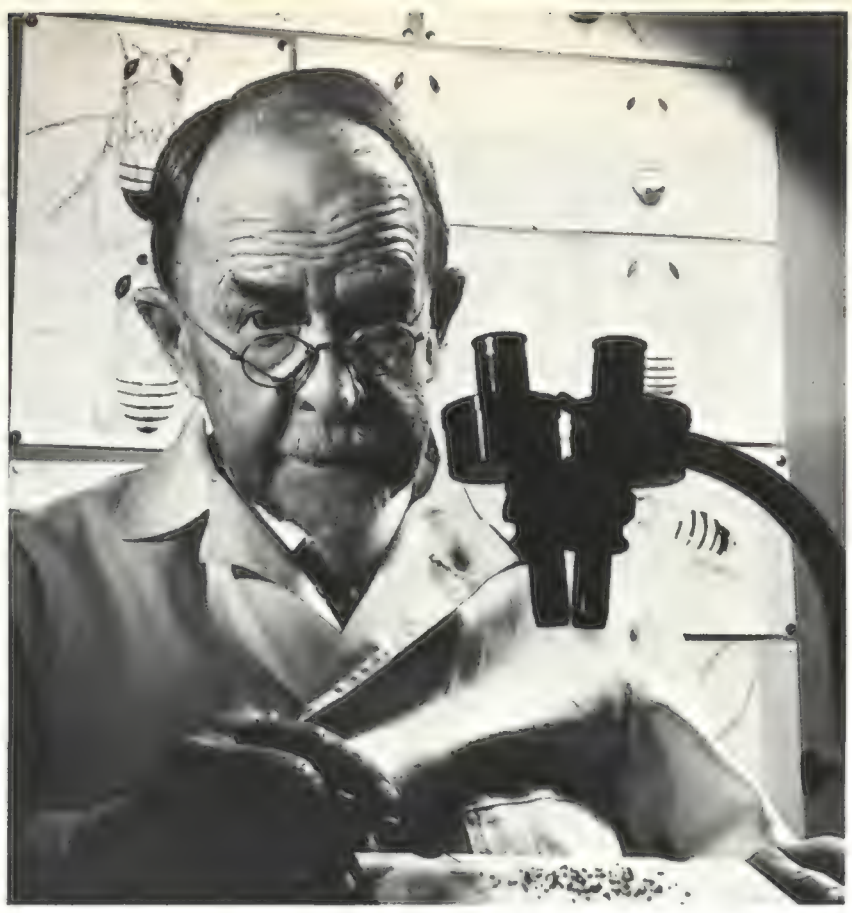


Chemist Linus Pauling's blackboard brimmed with equations after a molecular biology class in 1963.



Biologist Thomas Hunt Morgan broke ground in the 1930s with research on chromosomes and heredity.

the stack but rejected the reward, entitling them to retaliate in kind. When the senior came back to campus, he found the Porsche he had left in the dorm's parking lot reassembled—with the motor running—in his room.

Far more common are electronic or mechanical stack defenses that must be mastered in order to throw the latch. Recently, for example, students successfully talked their way past a computer "concierge" equipped with a voice synthesizer and a "disposition" diskette modeled on HAL, the paranoid computer in the movie *2001*. Prompted by a keyboard outside the door, the silicon-tongued sentry dispensed a series of clues and petulant asides, which grew increasingly plaintive as its interrogators zeroed in on the secret password, Daisy—an allusion to HAL's swan song, "A Bicycle Built for Two." Down the hall, a group of grease-smeared students were piecing together a disemboweled V-8 engine. Once they had reassembled and started it, the hot exhaust spun a small turbine that winched open the door.

Father Amos Throop, Caltech's institutional patriarch, might not have been amused. A Universalist lay preacher, temperance leader and Chicago alderman, Throop retired to Pasadena in 1886 at the height of the land boom that transformed the village of orange growers into a rich winter resort popular with Midwesterners. He was a restless retiree; in short order he founded a church, got himself elected mayor and in 1891 donated $200,000 to endow Throop University, a manual training academy that promptly changed its name to Throop Polytechnic Institute. By all accounts of the time, the school remained academically undistinguished until the arrival in Pasadena of three emi-

Caltech physicist Carl Anderson used a laboratory full of complicated equipment to discover the positron.

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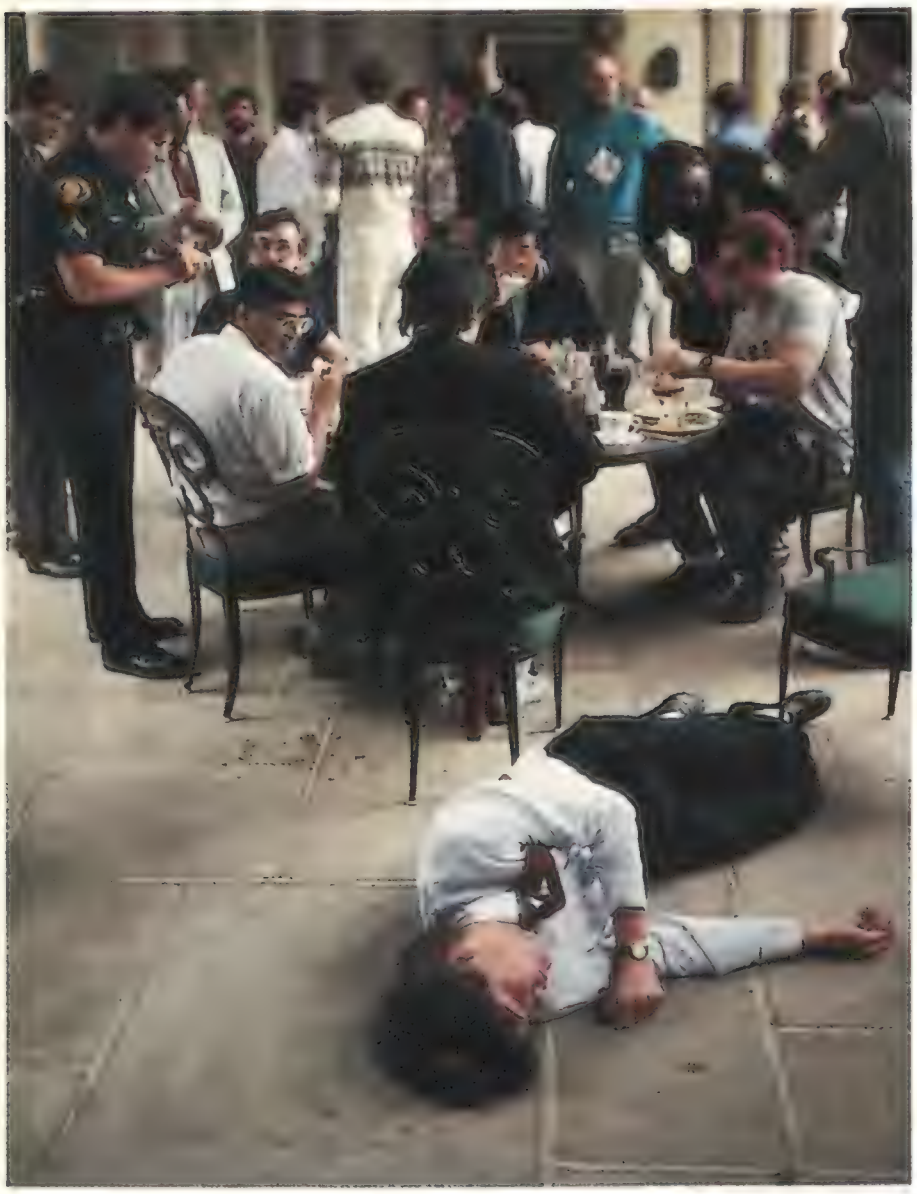
Digging for clues on Ditch Day

Undergraduates sing mock rendition of "We Are The World" for clue that will help crack a conundrum.

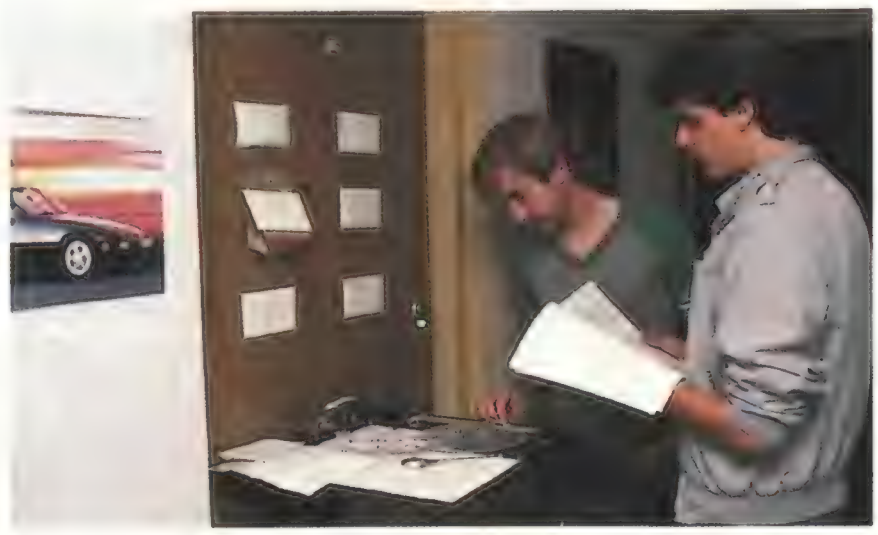


Policeman in on joke asks diners about a "murder" linked to bogus bomb plot students had to solve.

Students use hints in envelopes on door to answer physics problem and thus gain entry to senior's room.

In dormitory courtyard, young scientists complete their assignment: 45-foot-high tower of sticks, string.

Blindfolded pair maneuver board to guide ball into holes marked for clues while spectators offer advice.



nent scientists: astrophysicist George Ellery Hale, master builder of California's Mount Wilson and Palomar observatories; physicist Robert Millikan, the great experimentalist from the University of Chicago; and chemist Arthur Noyes, a former acting president of MIT. When a portrait of them was unveiled in 1928, a campus wag, in honor of their respective disciplines, dubbed the trio "Thinker, Tinker and Stinker."

Hale, the school's visionary godfather, never taught a class there. Instead, he deftly hatched schemes and pulled strings from his mountaintop observatory, where he would buttonhole prospective benefactors by day and seek the company of Keats for lonely nights at the telescope. "Make no small plans" was Hale's motto. In Throop he foresaw an opportunity to promote his grand dream of an academic community committed to cooperative research in astronomy, physics and chemistry, and their technical applications.

Born of a wealthy Chicago family and educated at MIT, Hale showed early signs of an edifice complex. In 1897, at age 29, he founded the University of Chicago's Yerkes Observatory in Wisconsin. In 1903 he journeyed to Pasadena to size up nearby Mount Wilson as a site for the giant telescope he envisioned for his 60-inch reflecting disk, then the largest in existence. Smitten with the 6,000-foot peak's usually cloudless skies, he immediately began construction of an observatory there with $30,000 of his own money and in 1904 persuaded the recently endowed Carnegie Institution of Washington, D.C. to finance the rest. Six years later, when industrialist Andrew Carnegie visited the observatory, Hale was hard at work on plans for something even better, the huge 100-inch scope that would make Mount Wilson the Olympus of astronomy.

In 1907 Hale accepted an invitation to join several prominent Pasadena citizens on the board of trustees of Throop, which then produced about ten graduates a year in electrical, mechanical or civil engineering. Whatever he thought of the school, Hale was impressed with the number and influence of Los Angeles-area businessmen who dominated the board. They were just the sort of local power brokers he needed to help transform Throop into a top research center. Such a place, he argued, would contribute immeasurably to Southern California's continued—nay, inevitable—growth as a region. Hale's manifest-destiny pitch played particularly well on Pasadena's Orange Grove Avenue, a millionaire's row built by captains of industry who were more than eager to hobnob with the esteemed astrophysicist.

Concerns for national security following the outbreak of war in Europe in 1914 added an air of immediacy to Hale's plans. So did the 1916 publication in Berlin of Einstein's general theory of relativity, yet another reminder of America's backwater status in pure science. That same year President Woodrow Wilson and the National Academy of Sciences endorsed Hale's plans to create and chair a National Research Council. The connections Hale made before and after America's entry into World War I proved invaluable. "The spirit of national service in the air coupled with the desire for preparedness should make everything possible," he wrote confidently to Throop president James Scherer in 1916. "And I am going to give Throop the chance to lead the way."

Never mind that the one-building school had only 19 faculty members; Hale was on a roll. He began to call in his markers from the local moneybags and set out to entice his friends, chemist Noyes and physicist Millikan, two of the most respected scientists on the National Research Council, to come to Pasadena to found laboratories in their respective fields.

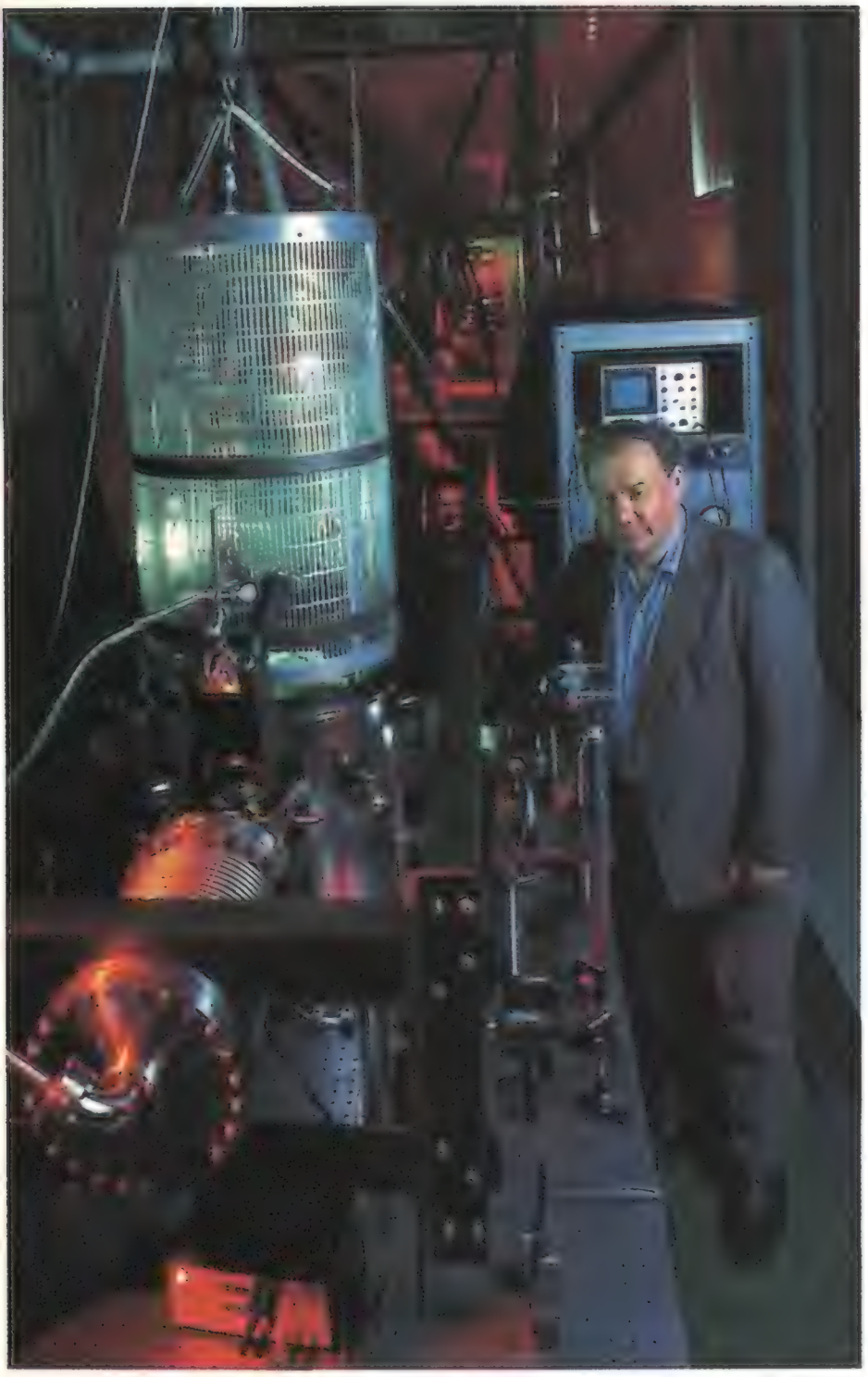
Why Hale made a lot of Noyes

Noyes already had one foot out the door at MIT, where he was embroiled in a bitter dispute over the chemistry department's mounting emphasis on industry-related research at the expense of Noyes' basic-science approach. After resigning in 1919, he headed for Throop to build his lab and the school's curriculum on the fundamentals of the physical sciences. He also insisted in 1920 that the school's name be changed yet again, to the California Institute of Technology, and joined Hale in wooing Millikan from the University of Chicago, where he was being touted as a possible Nobel winner for measuring the charge of the electron and Planck's constant.

Hale had met his match in Millikan, a man of overpowering intellect with an ego to match. In his memoirs Millikan recounted how he became interested in physics by chance as a sophomore at Oberlin College. One day he was approached by his Greek professor to teach an elementary physics course the following year. When Millikan replied that he was unfamiliar with the subject, his professor's answer was, "Anyone who can do well in my Greek class can teach physics." Such self-doubt rarely surfaced in Millikan as an adult. He had the unnerving habit of calling a meeting, presenting his analysis of the issue at hand, then dismissing everyone with the statement, "All right-thinking men must agree with me."

Millikan agreed to come to Caltech in 1921 only after Hale made him an offer that couldn't be topped by Chicago: the presidency of the institute, the directorship of a handsomely endowed physics lab and a

While researching this story at Caltech, Junius Ellis enjoyed staying at the Athenaeum, not far from the rooms that Albert Einstein occupied in the 1930s.



Physicist Ronald Drever checks prototype of antenna designed to detect evidence of celestial cataclysms.

promise to build a high-voltage lab equipped with a million-volt transformer "to bust up some of his atoms," as Hale put it. Millikan's decision, coupled with rumors about his huge salary and research budget, became the talk of scientific circles. Germany's Wilhelm Röntgen, discoverer of x rays, exclaimed: "Just imagine—Millikan is said to have $100,000 a *year* for his researches."

When Millikan won the 1923 Nobel Prize, the first bestowed on an American-born physicist, he really put Caltech on the map. The Carnegie Corporation led the way with a major gift for research on the secrets of matter and radiation, followed by Carnegie Institution funds for creation of a department of geology, Guggenheim grants for a department of aeronautics and Rockefeller monies for a department of biology headed by Columbia University's Thomas Hunt Morgan, who in 1933 would become Caltech's second Nobel laureate. Local benefactors stepped forward to bankroll buildings like the baronial Athenaeum—modeled inside after a London men's club Hale admired—where the school's professors and patrons could commune with the famous scientists who increasingly paid visits to Pasadena, especially during its seductively warm winters. They included such luminaries of physics as Niels Bohr, Paul Dirac, Hendrick Lorentz and Albert Michelson.

From the DC-3 to Voyager 2

Among those who stayed to accept faculty posts were physicist J. Robert Oppenheimer, future head of the Manhattan Project, and Hungarian aerodynamicist Theodor von Karman. Under von Karman's leadership, the Guggenheim Aeronautical Laboratory in the 1930s played key roles in developing such aircraft as Douglas Aviation's DC-3 as well as the principles of jet flight. One project, which took on a life of its own during World War II, was reorganized in 1944 as the Jet Propulsion Lab. Caltech manages the JPL for NASA; its engineers designed many of the nation's unmanned spacecraft, from our first orbiting satellite, Explorer I, to the planetary visitor Voyager 2, now en route to Neptune following its sensational rendezvous with Uranus last year.

Einstein's visits as a research associate in the years 1931 to 1933 marked Caltech's coming of age. He was on everybody's A list, and his schedule was packed with dinners and receptions orchestrated to draw attention to the school. Observed Will Rogers: "He made himself such a good fellow that nobody had the nerve to ask him what his theory was." Einstein was not asked to join the faculty full-time; during the Depression, money was so tight even at Caltech that Millikan and Hale had to dig into their own pockets to

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PHILLIPS 66

For more information, contact the George Miksch Sutton Avian Research Center, Inc., P.O. Box 2007, Bartlesville, OK 74005, (918) 336-7778.

Seniors Gabriela Cornejo and Sam Weaver take break from their studies to play with pet cat in dorm room.

Junior Adam Janin, a physics major, relaxes next to his stuffed bear and a painting on wall of Saturn.

meet the school's deficits. Besides, Millikan strongly disapproved of Einstein's outspoken support of Zionism and world disarmament, which might have offended some establishment-minded patrons.

Einstein was obsessed with a search for a unified field theory to describe the fundamental oneness of all forces and particles in nature. That quest continues to torment physicists, though many of them are hopeful that by the end of the century someone will succeed where Einstein failed. The one to do so may very well be someone who is studying at Caltech today. Many great theorists produce seminal work before they are 30 years old, and Caltech's emphasis on pure science and research attracts students who are unusually precocious and intense.

If you ask them why they chose Caltech over other elite colleges, students often cite the school's cloister-like intimacy and the absence of social pressures to dress smartly, date regularly or otherwise participate in typical undergraduate mating games. "The notion of Joe College is alien to Caltech," says recent graduate Mark Carlin, an applied physics major from Indiana. "There aren't enough eligible women here to make the effort worthwhile."

And a standard low-key complaint among male students is that females get too much attention. In its zeal to recruit women, the men suggest, the college discriminates in women's favor not only with admissions, but throughout their student days—a charge the college flatly denies. Caltech, clearly, is not the place to go if you're looking for a husband or a wife. "Women do get a lot of attention when they first arrive," says junior Rachael Clark, a biology and chemistry major from Washington State. "But after a while you're treated just like one of the guys. Nobody even puts away the *Playboy*s when you walk into the room."

The role model students profess to admire most is that of a tireless researcher staking his or her claim on the frontier of science. News of one such achievement came in the summer of 1984, when a Caltech research associate named John Schwarz leapt to the stage of an amateur cabaret at the Aspen Center for Physics and into the spotlight of theoretical physics. As Schwarz recounts it, "I started ranting about how I had discovered the complete theory of the Universe, how it has ten dimensions instead of four, all bound up by these tiny strings." The audience roared with laughter, especially when two men in white coats came out on cue to drag Schwarz off. The stunt was vintage Caltech; eight years earlier, Murray Gell-Mann, the school's 1969 Nobel winner in physics, convulsed the house with the original "Theory of Everything" spoof.

Mary and Robert Webb
Ages: 43,42
Two children

Income	
Combined	$83,000

Estimated Expenses	
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Food, clothing, Insurance	$21,000
College Tuition	$16,000

Savings, CD's, Mutual Funds	$23,000

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Paul L. Merideth

Thomas E. Everhart, Caltech's new president, believes that it has "special mission" to pursue excellence.

Schwarz's tirade wasn't entirely in jest. Days before, he and partner Michael Green *had* made a breakthrough in an obscure theory of nature, called "superstrings," that now captivates the imagination of physicists all over the world. The theory describes the Universe as composed not of points but of strings that vibrate, intertwine and ultimately underlie all elementary particles and natural forces, including gravity. The superstrings—as much smaller than an atom as an atom is smaller than the entire Solar System—may cause us to rethink the structure of the Universe.

For students and faculty alike, the range of challenges presented by current research projects is astonishing. Caltech is working with the University of California to build by 1991 the world's biggest optical and infrared telescope (SMITHSONIAN, June 1987). Its 394-inch eye will be four times more powerful than Caltech's 200-inch telescope at Palomar, astronomy's premier stargazer since it began operating in 1949. It should enable astronomers to peer into space, and back into time, 12 billion light-years, or just a few billion short of the supposed birth of the Universe.

One new window on the Universe, a gravity-wave antenna built by Caltech physicist Ronald Drever and his colleagues, is a prototype for a gravitational-wave observatory that is being developed by a Caltech-MIT team. It is expected that cataclysmic celestial events, such as neutron stars colliding, will produce gravitational ripples strong enough to be analyzed as they jiggle weights suspended in the antenna's 131-foot-long, L-shaped legs. The weights are monitored by a laser system. The apparatus is so delicate that it can detect movements of the weights through distances smaller than the size of an atom's nucleus.

These and other large-scale programs require close cooperation among scientists and engineers drawn from numerous fields—just the sort of interdisciplinary brainstorming fostered by a curriculum that stresses fundamentals. Caltech freshmen and sophomores are required to complete two years each of physics and math and a year of chemistry, regardless of their major. They are encouraged to take part in research during the summer recess; last year one out of every six undergraduates received a $3,000 stipend to pursue faculty-sponsored research projects. They are also expected to be quick studies, which often results in some rude awakenings. "Was I in for a shock in freshman math," recalls junior Junko Munakata, a chemical engineering major from Ohio. "On the first midterm exam I scored a 21 on a 100-point test. The class average was 50."

Complaints of demanding teachers and excessive homework are common in a student body that has adopted the old motto *Non illegitimis carborundum*, or "Don't let the bastards grind you down." So are candid and sometimes wistful admissions that scientists and engineers are likely to emerge from the grind with only a cursory knowledge of life outside the research lab. The school's administration puts great stock in its department of humanities and social sciences; graduates must earn at least 20 percent of their credits in these courses. But the two departments produce only a handful of graduate students and even fewer undergraduate majors each year, leading many scientists and students on campus to snub the liberal arts as a poor relation.

What becomes of the 60 percent of Caltech's students who don't go on to get PhDs and, presumably, positions in academia or corporate research institutes like Bell Labs? A few enter medical, business or law schools. The others join the legions of new graduates who simply wing it. Biology major David Marrit, class of '84, is apprenticing as a Hollywood film editor; 1986 grad Steve Lalli, an electrical engineer, is working as a bond analyst for Wall Street investment bankers Goldman, Sachs. Bill Gray, a brand-new physics graduate from Maine, taught gifted children over the summer and plans to find work as a computer programmer. "I'm not as crazy about physics as when I went there," he admits. "But I left having learned how to think, how to tackle and solve problems systematically. That's what Caltech is all about."

Senior Adam Greenblatt, biology major, rides unicycle to class as if it's the most natural thing in the world.

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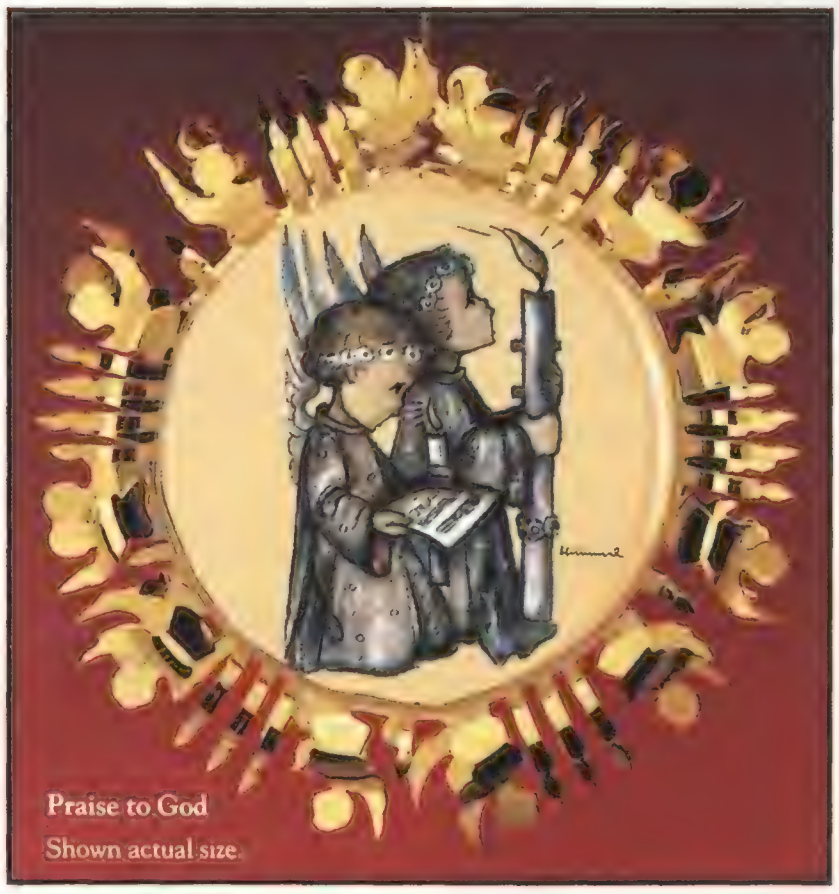

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Shown actual size.

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Aft view of the 1,000-foot *Columbia Star* as she crosses Lake Huron reveals most of her 37 hatches.

By Michael Agar

Sailors of the Fourth Coast try to look ahead

For 132 years, the Great Lakes ore carriers have served the steel industry's mines and mills; now their future is in question

"OK, let go the bow wire."

Captain Joe Toreki, 40-year veteran of the Great Lakes, is about to take $60 million worth of boat through a fast revolving door. Off in the distance is the blunt bow of the thousand-foot freighter under his command. Just behind him, behind the squared-off stern that completes the boat's boxy look, the Maumee River tears by, swollen with recent rain.

"Hard right, Carl." The command echoes on the bridge, once from the mate and once from the wheelsman. "Hard right, Captain." Carl Kimberlain, a displaced Tennessean who's traveled north to sail the Greats every season since World War II, grips the top spoke on the green steel wheel and spins it like he's playing roulette.

Seven decks below, diesels growl and whine. The *Columbia Star*—Starship Columbia, some call her—starts to back like a semi out of a driveway into a narrow street that moves. But the Maumee, the same river that soothes the patrons of Toledo's riverfront restaurants, won't let her go. Third Mate Dave Jensen, whose lake-sailing kin dot Superior's shores, says it

Cargo holds carry 60,000 tons of ore; wheelhouse, crew quarters and galley are in white superstructure.

first. "She's not coming around, Cap." Muscular currents rush downriver, denying the backing stern its right-hand turn. The Grassy Island bluffs, just across the river, leave precious little room to jockey her around. The stern has to come upriver, and it has to come quick. The captain rests his hand on thin chrome levers, tunes the twin props like a two-stringed violin. A second set of levers works the thrusters, props hidden in underwater tunnels that cut across the boat and push the *Star* sideways like self-contained tugs. No one says a word. The bridge tenses like the losing half of an arm-wrestling match.

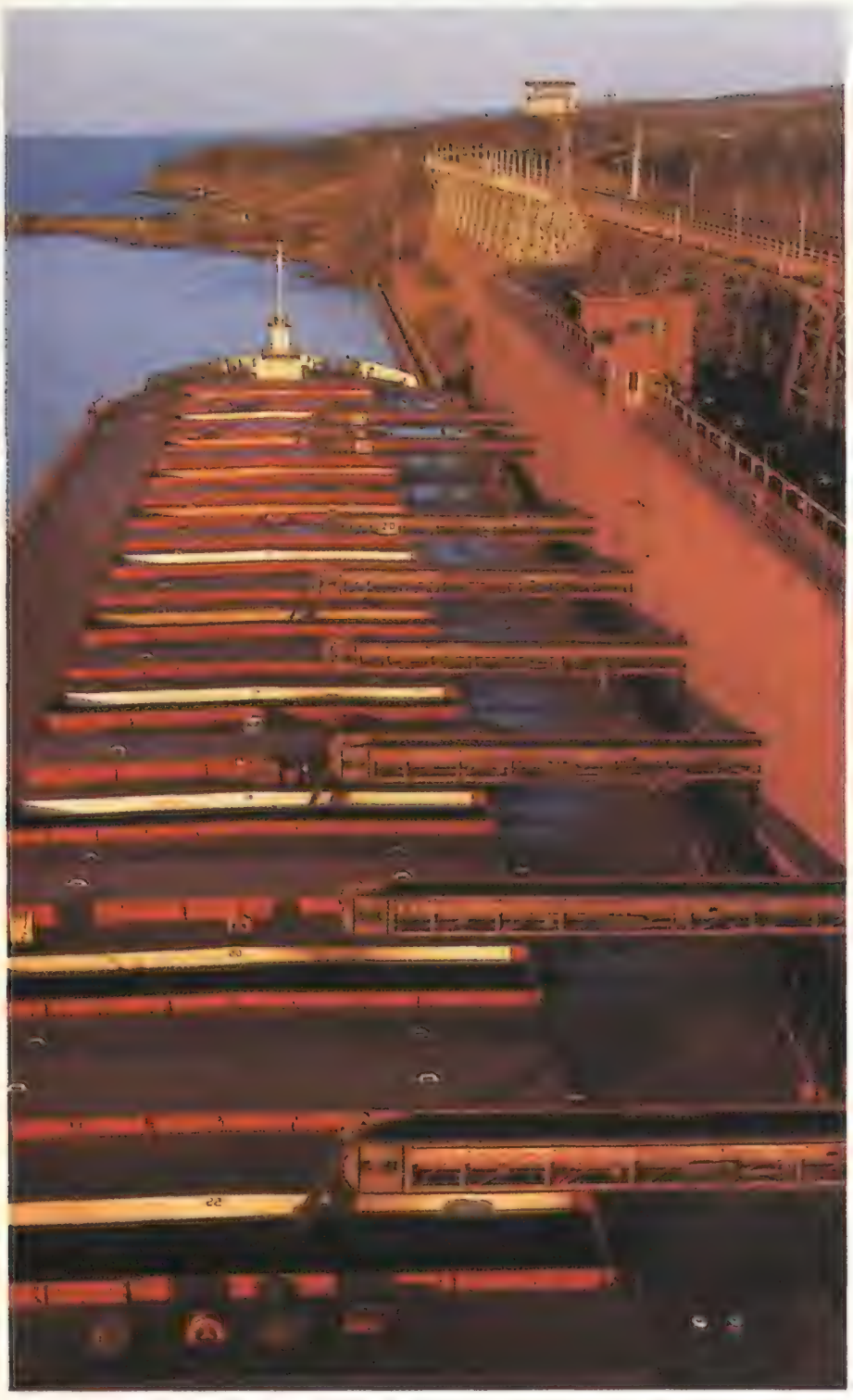
"She's coming around, Cap." Inch by inch the combined might of thrusters and props claws up the current. Her authority restored, the *Star* begins her regal backward turn. The watchman at the distant bow lifts the ship's phone, spins the crank that sounds a bell on the bridge. "Stem's north of the spile." In English, the front of the ship just cleared the bollard at the back of the dock. The *Star* is free and clear.

Captain and crew relax, but it will be short-lived and they know it. The marine radio is alive with the sound of problems. A dredge sits in the middle of the Maumee Channel, a narrow passage through the most shallow of the lakes. Pleasure boats and freighters litter the radar screen. Another boat from the Oglebay Norton fleet, farther offshore, reports that a dirty cotton fog conceals its own front end.

The *Columbia Star* honors with her name more than a century of ore-boat history. In 1855 the brigantine *Columbia*, the first downbound ship carrying iron ore through the brand-new canal at Sault Sainte Marie, dropped from Superior into Huron with a hundred tons of northern ore. Her modern namesake will make the same trip, but she'll carry about 60,000 tons more. That first boat—a laker is a boat, not a ship—began a new American tradition.

The tradition first started in 1844. A government surveyor wandered into the cold, wild, isolated lands of Michigan's Upper Peninsula. One September day his compass spun like a weathervane in a hurricane. He was standing on mountains of magnetite in the Marquette Range. A modest note about "mineral deposits" ended his contribution. But a few years later

Photographs by John McGrail



At Taconite Harbor, Minnesota, iron ore spills off retractable conveyor belts into the *Star*'s open hatches.

On arrival at Lorain, Ohio, where processing plants are located, *Star* offloads iron ore into huge mound.

Charles T. Harvey, a traveling salesman for a Vermont scales company, gazed at the magnetic black rock and thought of all those furnaces in Ohio and Pennsylvania. He borrowed, he finagled; he shanghaied workers from the Northeast and pushed them through brutal weather and an epidemic of cholera. In the end Harvey built a canal, the Soo, and bypassed the rapids between Superior and Huron. The iron rush was on.

By 1869, lake freighters had already acquired their peculiar look—the wheelhouse forward, the engine crew aft, a long stretch of deck for ease of loading and unloading, and boxy flat sides to fit more cargo into snug rivers and locks. Two years later, in 1871, the lakes were declared "seas," and the Corps of Engineers set out to improve harbors and channels. By the turn of the century, lakers had grown to 600 feet in order to serve steel. Andrew Carnegie founded the first large U.S. fleet in 1900 to haul ore to his own steel plants. For years, lakers fed raw material into Ohio and Pennsylvania furnaces. America without steel? The Great Lakes without freighters? Don't be ridiculous.

True enough, there will always be lakers, but they are now a beleaguered, if not endangered, species. Eighty-three percent of U.S. lake bulk commerce is

The boat is a self-unloading carrier; its boom moves 10,000 tons of ore per hour, emptying boat in six hours.

ore, coal and limestone—all ingredients in the recipe for steel. But many of the cooks have closed their kitchens. In 1981 Captain Toreki sailed the brand-new *Star* out of the shipyard—he owns a plank in the boat, as the saying goes. That same year the wheels fell off the economy. Before that watershed year, the Oglebay Norton fleet numbered 19. As the *Star* struggled with Maumee currents at the start of my trip in the summer of 1986, the fleet stood at 7.

The picture is grim. In 1986 foreign steel captured a quarter of the market. Brazilian iron ore is delivered to American docks cheaper than from the Mesabi Range. And steel itself is losing its exclusive role to synthetics. The Lake Carrier's Association laid out the statistics. Shipments in 1986 were down 6 percent from 1985, and 1985 dropped 12 percent compared with 1984. For iron ore specifically, net tonnage in 1981 was 84 million. By 1985, it had slipped to 58 million; by 1986, to 51 million. Traffic through the Soo also charts the decline. In 1981, 7,000 commercial freighters passed through. By 1985, the number had dropped to 4,500; by 1986, to 4,200. The U.S. carrier fleet is down to 55 boats; rates are at the line where revenues meet costs, sometimes they fall even lower.

Since 1970, the Great Lakes' 8,000 miles of shoreline have been America's officially designated "fourth seacoast." The very name connotes a grand expanse of water, a rambling freshwater plateau where a boat can wander for days in solitude. Midway up Lake Huron, or on a beam roll in the ominous Superior, that's exactly how you feel. But the old hands speak more of "the rivers," those narrow passages between the lakes that test the seaman's skill. The wheelsman throws the switch from "gyro" to "hand." The mate cranks on the ship's phone and alerts the engine room. Maneuvers in the narrow, shallow rivers play hell with water intake. The assistant engineer and the QMED—"qualified member, engine department"—watch the control-room gauges. A loss of raw water and the engines and generators go dead.

In the rivers America changes. A few short hours from Toledo the land clamps tight as a bench vise. The Amherstburg Channel takes away your breath. Five miles of twists and turns. Currents flip around like landed fish. The channel is 150 feet wide; the *Star* is 105 feet across. Wavelets spray off jagged rocks. And, just for good measure, a light fog forces the mate to the radar, where he stares at scattered green blips that are either buoys or small pleasure craft. At times it's hard to tell the difference.

South of Detroit, the shoreline turns surreal. America's industrial might limps along at half speed. A line of low black buildings, a smoking gray monolith. Orange and blue and red cranes straddle railroad tracks on girder legs. Conveyors angle between scattered black sheds like a roller coaster covered with soot.

A city of aged stone and sparkling glass

Detroit city itself is next, the multibarreled Renaissance Center at riverside, a city of aged tan stone and sparkling new glass. If you tipped the *Columbia Star* on end, the Renaissance Center would fall 521 feet short. The *J. W. Westcott II*, a boat with its own ZIP Code, chugs out to deliver mail and newspapers, as it does for every laker that passes. The river widens and the city turns green. Long stretches of cool lawn front on beautiful mansions shiny with new paint.

Just beyond tiny Lake Saint Clair, the *Star* lumbers past waterfront homes. The Great Lakes water level is on the rise; the river laps away at front lawns. Some homeowners stand on their piers and wave. Others fold their arms and glare. A sheriff's skiff pulls alongside and radios that some residents have complained. The speed limit in the channels, here and farther

The author, an anthropologist and free-lance writer, wrote Independents Declared, *a book about truckers featured in these pages in July 1985.*

Rising waters of Saint Clair River have encroached on homes, so freighters must slow down to reduce wakes.

north, is Coast Guard controlled. But a pleasure boat chimes in and confirms what the crew already knows. The *Star* has left no land-hungry waves. Thousand-footers are guilty until proved innocent.

The rivers don't end with the Saint Clair. After crossing Huron, Saint Marys River winds from the lake to the Soo. The notorious Johnson's Point requires an angled turn that rivals the Toledo dock. In Chippewa country, modest houses peek out of the deep-green northern forest. When you ask sailors why the pioneers didn't just put the steel mills in the Mesabi Range, they laugh. "Look at this country. Too wild, too isolated, too cold." More than a century ago a man named Graveraet founded what is now the city of Marquette, Michigan, to try it, but production costs exceeded Ohio's by more than two to one.

The river reminds the mate of a story, one of many about a saltwater sailor's rude awakening to the dangers of Great Lakes life. A crew on a "salty," as ocean-going ships are called, took on a lake pilot to get through the river. Locked inside a nighttime fog, the saltwater men stared at the narrow channel and asked the pilot how he knew where to steer. "Barking dog navigation," he replied. At the most treacherous bight —a bend in the river—an old farmer kept a pack of noisy dogs. One quick toot on the ship's whistle got them yapping.

Little islands of stacked stones surround the *Star* as she sails out of Saint Marys River. The skipper lifts the marine phone. "Soo control, this is *Columbia Star* at the rock pile." Just ahead lies the town of Sault Sainte Marie, a bridge in the distance uniting the American and Canadian sides.

For most of the trip the *Star* sails a line between the two nations, a line that now symbolizes a sailor's complaint. Canada's Great Lakes fleet is in better shape. Her policy of subsidies and incentives began right after World War II; the United States waited until 1970. When the Saint Lawrence Seaway opened in '59, Canada built ships to blend lake and ocean trade. The U.S. fleet gazed oceanward, shrugged its shoulders and went back to hauling ore. The *Star* is designed for short lake chop and is too long by almost a third to make the seaway locks. Canadian ships are on the list with Asian steel and Brazilian ore. "Free trade is great," says Bryce Sunderlin, Navy vet and Colorado refugee; "too bad only the United States is doing it."

The *Star* slows to six mph. "We're farmers, not sailors," jokes Bryce. "This is a boat with windows and doors, and we do miles per hour." But knots are the measure of wind, and a good one is blowing—40 knots' worth snaps the Canadian courtesy flag and nudges the *Star* off her angle of approach. Captain Toreki lifts the ship's phone. "Give me the generator on the starboard side." Down below, Jay McElroy, the engineer on watch, shifts one of four V-20 diesels over to the starboard generator to power the thrusters. Jay worked his way up through the ranks, "up through the hawsepipe," they call it, after the opening where an anchor line penetrates the hull.

On the bow, deckhands and watchmen slip orange vests over yellow slickers. A mate rigs up a bos'n's chair on a short boom, then lays out the thick cables that roll off motored winches. Other crew take their stations along the deck, ready to chant the gap between hull and lock to the skipper on the bridge.

Catching up on gossip from home

From bow to stern, 37 hatches span the *Star*'s deck. Alongside hatch number 30, a man sits alone, oblivious to the busy crew. Orval Wollan, the steward, on the lakes since '63, is famous among the fleets. No one cooks better meals.

Wollan is watching the shore, where a woman leans across the open driver's window of a parked white car, looking back at the *Star* through a chain link fence. A whip antenna wiggles in the air. And as the *Star* goes through the Soo, Orval stares at his hometown and speaks into a hand-held radio, catching up on the gossip with his wife. Like any other licensed crew, he sails 60 days before he's eligible for 30 off.

The *Star* nudges her steel rubbing bars against the buffered wall of the Poe Lock, the only one that handles thousand-footers. The boom swings out and drops a deckhand onto the pier. He trots aft and the boom swings out with another. By the time the fourth man is down, the *Star* is in the lock with only a few feet to

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Joe Toreki, captain of the *Star*, checks the nautical charts; he was at the helm for her 1981 maiden voyage.

In *Star*'s engine control room, Chief Engineer James Eustice talks to the wheelhouse several levels above.

spare. Light nylon lines are tossed off the deck. Each dockside hand hauls one down until he grabs the "eye," the wire loop that marks the start of the cable. They slide the loops over bollards, shaped like giant mushrooms. The bos'n on deck twists the levers that roll the winches, and the *Star* hugs the side.

After Superior fills the lock and the old gray gates swing open, the *Columbia Star* sails into Whitefish Bay. Her course edges near the broken hull of a boat from her fleet, the *Edmund Fitzgerald,* a Great Lakes tragedy made famous by Gordon Lightfoot's song. For reasons unknown, the 729-foot boat sank without warning in 1975, taking all 29 crew members with her. The loss of the *Fitz* was a personal one for many of the men on the *Columbia Star.* Some had served on her; others lost close friends. The tragedy reminds them all of winter. "Winter is when you earn your money," says Andy Sturgess, the British-born first assistant engineer. Everything freezes; nothing works. The crew coat themselves in layers but shiver all the same. The buoys are gone. Snow and ice pile up on deck and freeze the hatches, and floes clog the raw-water ports. Slabs of frozen river threaten steel hulls.

But for now, it's clean sailing as the *Columbia Star* settles into the upbound course to Silver Bay, Minnesota. Dave Jensen, the mate, spots the little town, a dot on the horizon, and checks the loran, nicknamed "Sinbad" when it works and other, unprintable, things when it doesn't. The digital readout gives course, position, speed, time to change course, and everything but baseball scores in Detroit. But when the weather goes bad the loran—just when you need it—can report Mach-five speeds and locations south of Antigua.

Several decks below, the engineer on watch pours his coffee and scans the panels of gauges. Good engineers work by sound and sensation, they say. Pitches, from treble whines to bass roars, mix in mechanical song. When harmony or rhythm slides just a bit to the wrong side of perfect, the good engineer senses it, knowing which voice lost the beat and went flat.

The engine and deck are different worlds. The engineer is governed by a mechanical esthetic; the deck uses the engine as a tool in the struggle with nature. The differences pop out in conversation, in where people sit in the galley, in how they talk about cars and sports. The differences are engraved in the organizational chart. The captain is the captain, but there's also a chief engineer.

In the classic laker design, the deck crew lived forward; the engine crew, aft. Stories are told about boats where lines were actually drawn to mark the boundaries. On the *Star,* a "stern-ender," everyone sleeps and eats aft. Though the new design was born for reasons of economy rather than psychology, the crew agree that proximity of deck and engine leads to a more relaxed season. Everyone meets daily in the galley, the source of food and linens. At mealtime, officers eat in one room, crew in another. Deck and engine are, for a time, united and then split by rank. Management talk about labor and the other way around. But between meals distinctions disappear. A movie on the VCR. A game of cribbage in the crew galley. Or just a

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Calm prevails on the approach to Silver Bay. A company town, its company is the first thing you see. The early evening sun rests above the hills behind the lakefront taconite plant. The water tower of the little town is just visible on the low plateau to the right. Silver Bay was founded in the 1950s around the plant that turns low-grade iron ore (impure taconite) into pellets the size of medium-type ball bearings. Between the "taconite tax" and company largess, life was sweet until '81. But now when town residents gather at softball games they talk about labor reductions at the plant, about seniority lists cut to the original workers, about failed efforts to attract new industry to this remote corner.

The captain calls for generators on the port side, works the thrusters to back the *Star* in. The engineers below check the 18 ballast tanks, making sure she rides low enough to slide under the loaders. Zigzagging across the deck, deckhands pop the hatch clamps with a tool that looks like an oversize tuning fork. A crane—the "iron deckhand"—chugs along and lifts off the hatch covers, finishing just as the last man drops off the bos'n's chair and snugs up the cable to the pier. As the engines shut down, sirens blow ashore and two-story shacks attached to silos of taconite stick out conveyor tongues and start loading the seven holds. The first pellets roll along under thin clouds of dust; minutes later the dust has curled and thickened. From the bridge, the deck is so smoky it looks awash in flame.

Down below, throwing the switches that shut the diesels down, the engineers have been talking about Father's Day cards. "When you want to buy something like that, you've got to plan a month ahead," says the chief engineer, a silver-haired lake veteran from Cheboygan, Michigan. His father, a Great Lakes sailor himself, had warned him. "It's a hell of a life for a family man." By the time they get to the town, only a convenience store is open. No cards there. Floating stores called "bum boats" used to serve the freighters, but, with reduced lake traffic, they've dropped away.

Off-duty sailors clatter down the steep ladder and stretch out in the luxurious spaces of land. Just beyond "Rocky Taconite," a Disneylike statue in the town shopping center, they cross the road for a cold bottle of beer. The locals greet them. They come this way—Silver Bay, Taconite Harbor, Duluth—40 times a season. While they relax ashore, the little shacks slide on their tracks farther along the line of hatches, but it'll be ten hours before the skipper calls for the engines. Then the *Star*, her red decks coated in grime, will head back to Toledo. Her draft will push the 28-foot maximum for the channels; an inch of draft is worth 237 tons of freight.

Three days later she arrives back home in Toledo, her decks now clean. The unloading boom swings out even as the deckhands make fast her cables. Before the ladder is down, a belt rolls deep in her hold, speeding taconite sternward to the twin belts that squeeze it and toss it skyward into the hopper just beneath the bridge. For six hours, the boom will build a 60,000-ton taconite mountain next to her dock. Before the last pebble trickles off, the captain will start casting off. A thousand-footer costs around $13,500 per day to operate, plus 11,000 gallons of fuel when under way. Time, now more than ever before, is money.

The town's worst fears come true

The following spring I return for another trip on the *Star*. I find her in Lorain, Ohio, instead of Toledo. She is headed for Taconite Harbor instead of Silver Bay. That town's worst fears have come true. The taconite plant has closed. People are moving out in droves and the town is barely on its feet. The crew is a mix of old and new faces. The new faces aren't new sailors, though. With vacations, the hip-hop of "relief" work, and crew shifts among different boats in the fleet, the same players move from stage to stage.

But the basic story hasn't changed. More imported steel and less demand. Larger boats that need fewer crew—the iron deckhand that moves the heavy deck hatches replaces three men; the change from steam to diesel renders obsolete the coal passers and firemen. A thousand-footer carries the load that three older boats used to. Self-unloaders speed the taconite off and allow for more trips. The old Hulett unloaders—those huge bucket jaws that a man would ride right down into the hold to take a bite of ore—are now the proper subject of industrial archaeology.

The first conclusion from this ironclad logic is that

Carrying up to 25,000 tons of ore—almost half *Star*'s capacity—*American Republic* lighters it up the Black River in Lorain, Ohio, toward a processing plant. The 600-foot boat is built to negotiate narrow channels.

The *Star*'s stern nestles into the Poe Lock of the Soo Canal at Sault Sainte Marie. It is the only lock of the Soo capable of containing 1,000-footers, and it's a tight fit: the ship is 105 feet wide; the lock is 110 feet wide.

QMED ("qualified member, engine department") Rodney Halterman shapes up on bike on *Star*'s deck.

most Great Lakes sailors just aren't sailing anymore. Twenty five years ago, there were 12,000 Great Lakes sailors; last year, their numbers had dropped to 1,900. The survivors are the veterans on the seniority lists. Shrinking fleets put a high premium on seniority. Jim LaParl, QMED on the *Star*, is actually an engineer. He studied at a union school and "wrote for his license." But there's no slot for him to move into. At the end of last season another company hired him as an engineer, but now he's back on the *Star*. A permanent move means a union change; it would cost him his seniority, and with a new baby due he won't gamble on a layoff as well as a loss of insurance. Soon though, he says he'll take the chance. Either that or go to work in an onshore power plant. Engineers can work anywhere there's an engine.

The solution isn't so easy for mates. Dave Jensen, the mate who brought the *Star* out of Toledo, wrote for his license and went from deckhand to pilot. He stayed on the deck to hold his seniority. But last year, when a chance for relief work on the bridge came up, he couldn't resist. He rolled the dice and dropped from the top of one seniority list to the bottom of another. On my return visit, Dave wasn't aboard. He picks up work in lumber and construction and hopes for a call. He's in the middle of the relief list; he'll get work later on in the season when the vacations start.

Working up through the hawsepipe now takes the nerve of a Vegas gambler playing against heavy house odds. "There's nothing for sure and you can't bank 100 percent on everything," says Steve Vujcevic, a third assistant engineer. Most sailors now have land jobs they hold in reserve, though seldom are they as interesting or well paying, nor do they carry good benefits. Even among the permanent crew, it's not unusual to find men overqualified for the positions they hold. Watchman Larry Wieme is actually a mate; Second Assistant Engineer Mark Lathrop is really a first; and Second Cook Calvin Statham is nothing less than a steward in disguise.

Those sailors who left the lakes permanently find their way into new niches. Joe Bechtold, who was an able-bodied seaman, dropped from the crowded hiring list years ago. He tried to develop a dinnerboat, a replica 19th-century side-wheeler that would offer patrons a meal and a cruise on Lake Erie. He hoped to base it in "the flats," the new leisure strip that has replaced some of the mills along the infamous Cuyahoga. But the deal didn't work out for him, so now he's found a totally new line of work—selling advertising.

Joe tells a story you hear all the time aboard the *Columbia Star*. The money caught his eye at first. But then the addiction set in. He misses the lakes. But he refuses to sulk, looking instead to the future.

In spite of all this, some new young talent enters the struggle every year. Mike Wood, 20-year-old cadet from Traverse City Academy, overhears stories like Dave's and Jim's all the time. He's discouraged by what he's heard during his two-month internship on the *Star*. A full-time job as third mate would earn him in the mid-30 thousands for a season's work. The odds are against him. But he's a child of oil embargoes and wildly fluctuating interest rates, a young man for whom the term "economic forecast" is an oxymoron. He hopes that future retirements will open some slots and allow him to jump onto a relief list. Why not roll the dice on a job you like?

Like a dinosaur upset by a chill

Veterans and newcomers alike hope that, somehow, a twitch in the world economy will turn things around. Their hopes are probably unrealistic. The lakers grew with steel, developed like inbred animals for a special economic niche. The *Star* hauls high-density freight on Great Lakes waters. She can do little else. She's like a dinosaur, upset at the unfamiliar chill from approaching glaciers. Unlike the dinosaur, the *Star* and a few others like her will survive.

When the *Star* is docked in Lorain you can see her from downtown; she rises up in the distance like a

shrine. Just beyond the mountain of taconite that the unloader builds on her port side sit wood-frame houses, as if the *Star* has landed in the middle of a small town. The Erie Avenue drawbridge closes off the Black River behind her. To starboard, arrayed in an incongruous row, are the town sewage plant, an anchorage for pleasure boats, and a spoil area for the silt dredged out of the Black River's mouth.

Across the *Star*'s bow spreads Lake Erie, the freshwater highway that will carry her north as soon as her holds are empty. Lorain will be happy to see her leave. They don't like the dust, and they have visions of development at the Black River mouth. Like Toledo and Cleveland, waterfront restaurants and marinas are on the agenda, a pleasant place where locals and visitors can enjoy the river instead of putting it to work.

The *Star*'s boom swings inboard and the call comes in from the watchman. "Bow wire's gone, Cap." Joe Toreki radios an inbound freighter, the 600-foot *American Republic*, which will shuttle the taconite from Lorain over to Cleveland and "lighter it off." She's built for the crooked Cuyahoga River, an expensive boat with multiple rudders and thrusters that can't afford to sit idle. She refuses to wait and "shows her teeth" as the water foams up in front of her bow.

The bridge mutters in unison, but there's nothing they can do. The same economic pressure drives the lighter, perhaps even more so, since she is a costly vessel that carries only 25,000 tons. The captain stares down at the old railroad tracks, stained taconite red, and waits for the lighter to pass. "All right, let her go." The last crew scramble up the ladder at the stern. Jerry Driscoll, the first mate, seals his eyes against the radar hood and checks the distance to the breakwater light. The bridge is a medley of chants—distance from boat to pier, from boat to light—as direction is altered one slow degree at a time. "Yeah OK, we got her," says the captain, and the crew relaxes. "Give us all four," he calls into the ship's phone. The engine room switches the fourth engine, the one that's been driving the thrusters, shifting its power back to the main shaft. The crew, wherever they are, feel the rumble of her engines. She's sailing through some rough times, but right at the moment the *Star* is free and clear.

Sliding smoothly up Detroit River, *Columbia Star* approaches Ambassador Bridge, which links Detroit (at left and center) with Windsor, Ontario. As at other ports, the demand for iron ore has gradually fallen.

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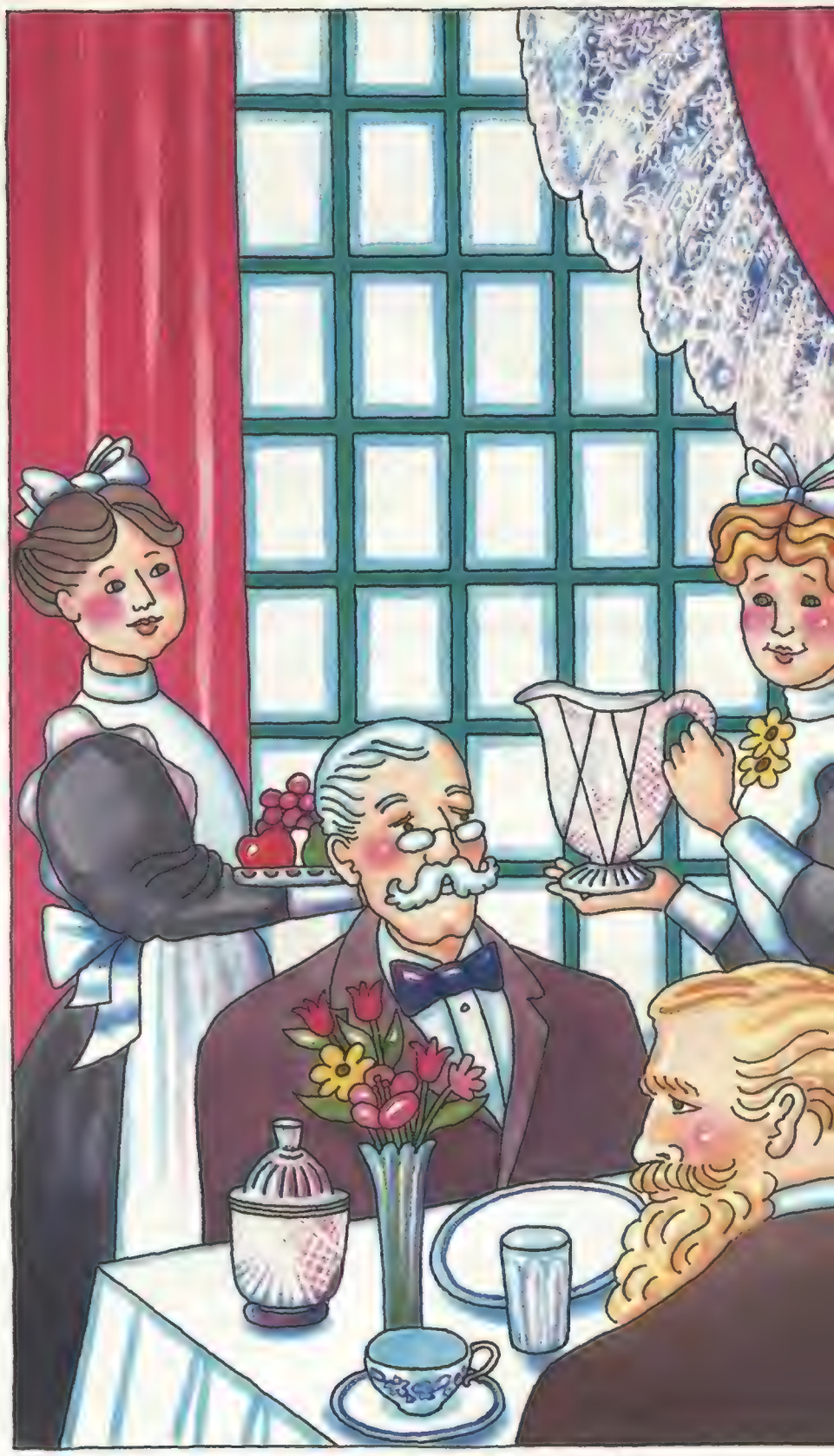
By James A. Cox

How good food and Harvey 'skirts' won the West

Beyond the Mississippi and along the Santa Fe, nothing but the very best—in cuisine, comfort, beauty—would satisfy Fred Harvey



Under Fred's benign eye, a bevy of Harvey Girls ministers to group of anticipatory Victorian diners.

As an ambitious young Englishman seeking his fortune in the United States in the mid-1800s, Frederick Henry Harvey followed the prevailing wisdom of the times and headed West. His experiences there led to several trenchant observations about the deficiencies of the countryside the deeper one traveled off into the sunset:

"There wasn't a square meal or decent lodging west of St. Louis.

"There are no ladies west of Dodge City.

"And no women west of Albuquerque."

Fred Harvey wasn't the first man to have to sleep five across a bed with four booted strangers in a pungent hotel room; nor was he the first man to lose his appetite over a bowl of gray stew filled with unidentifiable objects. But he was the first to do something about these societal shortcomings—the food and lodgings initially, then the ladies. As a result, Harvey won the undying gratitude of several generations of hungry travelers and lonely railroad men, sodbusters and cowhands, and is still remembered as the man who "made the desert bloom with beefsteaks and pretty girls."

Travelers today make jokes about airline food and pale at the sight of still another pair of golden arches on a long Interstate journey. But that fare is epicurean compared to the provender that was slapped down in front of the famished voyager in the greasy railroad stops of the Old West—rancid bacon, eggs preserved in lime, bitter coffee made with the local strongly alkaline water, ancient beans, leaden biscuits accurately called "sinkers," and "antelope steak" so tough you couldn't get your fork in the gravy—all prepared by a chef who was trained in a mining or logging camp, then fired. Of particularly evil repute was "railroad pie," generously described as upper and lower crusts of cardboard held together by thick glue.

Meal stops sometimes lasted only 10 to 20 minutes in that madhouse, the depot quick-lunch, and since the trains were not known to dally once the station bell rang and the conductor made his announcement, passengers were in a frantic, sorry state by the time meals

A sense of abundance, variety and consistent good quality rivaled many fine restaurants in the East.

arrived—and in worse shape after gulping them down.

Particularly deplorable was the scam played on several Western lines by dishonest restaurant owners and train crews. Passengers paid 50 cents in advance for a meal. As soon as it was brought out, the all-aboard bell sounded and the travelers scrambled back to the coaches, food virtually untouched. But it wasn't wasted. Those same dishes were brought out for the next group of victims, and the cooperative train crew was paid off to the tune of a dime a head.

Wary of these pitfalls, experienced travelers brought picnic lunches from home. This was hardly an ideal solution while crossing the prairie on a seething summer day. "When everybody in the car got out their lunch baskets," wrote a correspondent for the Kansas City *Star*, "the bouquet . . . hung around the car all day, and the flies wired ahead for their friends to meet them at each station."

In 1867, George M. Pullman built a small kitchen, with folding tables, in one of his new sleeping cars; the following year, his first real dining car. But these newfangled meals on wheels saw very limited

Illustrations by Brenda Losey-Sumpter

First venture of Harvey and the Santa Fe, a pristine counter in Topeka, was mobbed by townies, travelers.

service, while at the stations—the new social centers—consistent good service was unavailable. The times were right for Fred Harvey to step forward.

Born in London in 1835 of Scots-English parentage, Harvey arrived in New York from Liverpool in 1850 at age 15 and landed a job as a pot scrubber at the Smith and McNeill Café on Washington Street. He earned $2 a week and meals, yet he somehow managed to put by the money for passage on a coastal packet to New Orleans, where he landed jobs in fine restaurants. Surviving yellow fever, he had saved enough by 1855 to ride a stern-wheeler up the Mississippi to St. Louis. There he found a partner, opened a modest restaurant that flourished modestly and won the heart of a 17-year-old Bohemian girl, Barbara Sarah Mattas. The Civil War brought difficult days, and when Fred returned to work from a bout with typhoid he found his business gutted financially and his erstwhile partner gone.

Pre-Harvey travelers would find muscle-bound coffee, rigid eggs, gray gravy and other victuals to match.

Fred then turned to railroading, eventually becoming general Western freight agent for the Chicago, Burlington & Quincy—a traveling job that made him a captive patron of every fleabag and railroad poison palace on the Northern plains from Iowa to Montana.

Reasoning that the West had suffered long enough from chronic dyspepsia, in 1875 Harvey took another flier with a partner and opened a couple of eating establishments on the Kansas Pacific line. This came a cropper when it turned out that Fred's stringent standards were not his partner's.

But Harvey remained convinced that depot restaurants, properly run, could offer good food at reasonable prices along with civilized service and pleasant surroundings—and still turn a profit. Looking ahead, he envisioned fine dining rooms in first-class hotels, where railroad passengers could stop over and visit the Wild West in comfort and luxury.

He tried out these ideas on his own boss at the Burlington, who was not ready for such a daffy scheme. But Charles F. Morse, general superintendent of the

Both parties were overjoyed when it was necessary to expand it immediately to take care of the crowds.

Atchison, Topeka & Santa Fe, was. With only a handshake to seal the deal, because "both were gentlemen," Harvey bought out a dingy, ten-seat lunch counter at the Topeka depot in 1876 and went to work. He scrubbed it from wall to wall, arranged for fresh supplies of quality foods and opened with a larger, more moderately priced menu along with efficient, courteous service.

Within a few weeks the little counter was so jammed with customers, not only railroad passengers and train crews but also Topeka townsfolk, that it had to be expanded. Harvey was ecstatic. So was the Santa Fe.

Morse and Harvey next turned their attention to the tiny hamlet of Florence, Kansas, pop. 100. They signed a contract and shook hands again. Harvey bought the local hotel and, like a gambler on a roll, went all out. He brought in expensive walnut furniture, Sheffield silver and crystal from England, china from France, linens from Ireland—and Konrad Allgaier, head chef from the posh Palmer House in Chicago, at the unbelievable salary of $5,000 a year.

Mr. Cox, a free-lance writer living in New Jersey, has written for SMITHSONIAN *on such diverse topics as sneakers, George Gibbs and John L. Sullivan.*

Florence was agog. Especially when the chef also went all out. He offered $1.50 a dozen for prairie chickens, 75 cents for a dozen quail, 10 cents a pound for butter, and the highest prices that anybody had heard of for fresh fruit and vegetables. The novelty of an excellent chef producing magnificent European cuisine in a backwater burg in Kansas proved irresistible. Meals at the Florence Harvey House became famous far and wide, and travelers began to arrange their schedules to stop there.

Dining in an elegant boxcar

Resigning from the CB&Q in 1882, Harvey set up a small office in Leavenworth. As the Santa Fe gandy dancers worked their way westward, Harvey Houses sprang up at such stops as Hutchison, Dodge City, Las Vegas, Albuquerque, Gallup, Needles and Barstow—by 1884 there were 17 along the route of the Santa Fe. These first establishments weren't as grand as some of the later models, but inside their rough exteriors hid many pleasant surprises. When the Santa Fe construction gangs reached Holbrook, Arizona, for example, passengers alighting from their trains shuddered at the sight of the temporary restaurant Harvey had thrown up—five sun-bleached old boxcars removed from their rusty carriages and jammed together. But the interiors glistened in freshly painted Indian colors and the tables were set with customary elegance—as well as sweating pitchers of ice water and bouquets of fresh flowers from California. Not to mention the excellent Harvey food, including coffee brewed with fresh water brought in by tank car and real fruit pies cut in five portions instead of the usual six.

Since the Santa Fe was the only line in the West on which travelers could get anything decent to eat, passenger traffic boomed and, in 1889, eleven years after signing his first, five-year contract with the Santa Fe—Harvey really preferred informal agreements—he signed a new one. The deal he asked for and got would have made his canny Scottish forebears proud. He was to have the exclusive right to operate all eating houses along the Santa Fe, with the railroad furnishing fuel, ice and fresh water as well as free transportation for supplies and Harvey employees—all profits to the Fred Harvey Company.

Harvey was constantly on the go, making his way up and down the line and into the surrounding area, searching out sources of supplies. During his travels he would often drop in on a restaurant or lunchroom unannounced and conduct a surprise inspection. Woe to the manager who condoned carelessly set tables, tarnished silverware, chipped china or less than sparkling glassware! Harvey would yank the tablecloth free, sending everything—dishes, cutlery and all—

On impromptu visits to his restaurants, Harvey's expression of outrage over chipped china, unpolished silver or glassware was somewhat dramatic. Managers would get, at best, a stern lecture; at worst, sacked.

smashing to the floor. And then, if the sins were numerous and grievous enough, would sack the manager.

It was one such traumatic visit to Raton, New Mexico, that was responsible for what was probably Harvey's greatest stroke of commercial genius—the Harvey Girls. At the time, New Mexico bore the dubious distinction of being just about the wildest territory in the Wild, Wild West. When Harvey arrived one morning, he found a surly, seedy crop of waiters, bruised and puffy-eyed from the previous evening's debauches, treating customers as if they had wandered into the sleaziest hash joint in town instead of a Harvey House. He fired the lot on the spot and some inexperienced but respectable young women were hired. The experiment was an immediate success and one of the West's fairest institutions was born.

Soon, major newspapers in the East and Midwest began carrying help-wanted advertisements appealing to "Young women of good character, attractive and intelligent, 18 to 30, to work in Harvey Eating Houses in the West." Harvey set up interviewing offices in Kansas City and Chicago, while Western newspapers wrote glowingly of pretty girls flocking to the prairies, "bringing culture, refinement, and romance."

Successful applicants had to sign a contract vouching for their good character and promising not to marry for a year. In return, they received a salary of $17.50 a month, plus tips, room and board—enough in that era for a thrifty young lady to build a respectable nest egg. Rules were strict. The girls lived in Harvey dormitories under the stern eyes of formidable matrons, who saw to it that their charges were in by 10 P.M., except on special occasions such as the weekly Friday-night dance. Gentlemen callers had to be received in a chaperoned courting parlor, and if a girl missed curfew three times she could be fired.

The earliest standard uniform consisted of black shoes and stockings, a plain, black, ankle-length, long-sleeved dress with starched white apron, a white collar and black bow, and a neatly tied ribbon in the hair. Rather than turning the eyes of amorous young swains elsewhere, this sober garb only enhanced the wholesomeness of the Harvey Girls in contrast with other "working women" of the West—the painted ladies who labored in saloons and brothels—and many a true romance bloomed. More than one of the matrons complained of running a matrimonial agency. In the latter years of the century an estimated 5,000 Harvey Girls walked up the aisle with railroad engineers, conductors, station agents, local merchants, ranchers and, of course, an occasional sweet-tongued drummer.

Harvey even staged parties for the newlyweds. Aware of the value of good public relations, he undoubtedly enjoyed the popular witticism that more marriages were made in Harvey Houses than in any other institution under *H* except Heaven. And he may well have felt a little puff of pride when editor Elbert Hubbard waggishly started the rumor-to-become-legend that the first boy child—there were more than 4,000—from these unions was named Fred or Harvey or both.

Appreciation for Fred Harvey's contributions to the collective hearts and stomachs of the West can still be seen occasionally on late-night television airings of MGM's 1946 film *The Harvey Girls*, starring Judy Garland. But there are other tips of the cap from ear-

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lier years. "He has kept the West in food and wives," wrote Will Rogers, the homespun humorist. "Those Western railroad brakemen and Harvey lunchroom waitresses were the future aristocracy of the West," novelist Edna Ferber remembered her father saying. The Sage of Emporia, Kansas, William Allen White, wrote that Fred Harvey "had more friends west of the Mississippi than [President] William McKinley and [world boxing champion] Bob Fitzsimmons together." Why? Because, wrote Kentucky humorist Irvin S. Cobb, "Two thousand miles from salt water the oysters that are served in his dining cars do not seem to be suffering from car sickness [and there] are spring chickens with the most magnificent bust development I ever saw outside of a burlesque show."

A 50-cent tip and Bob Hope, too

The not very famous were also heard from, in not very good rhyme: "Harvey Houses, don't you savvy,/ Clean across the old Mojave,/ On the Santa Fe they've strung 'em/ Like a string of Indian beads./ We all couldn't eat without 'em,/ But the slickest thing about 'em/ Is the Harvey skirts that hustle up the feeds."

In a similar down-to-earth vein, the memories of a few of the latter-day Harvey "skirts" have been recorded. "People kind of looked down on a girl for being a waitress in 1924," recalled Opal Sells Hill. "But they didn't when you worked for Fred Harvey; I loved being a Harvey Girl. You had pride. You didn't wear earscrews or nail polish." Neva Davis, a Harvey Girl in Albuquerque in 1923, said, "You earned your money in tips. Nobody got any overtime. In the early days, everybody tipped a dime. Once Bob Hope came in alone and ordered a sirloin steak. Tipped me 50 cents. That was generous."

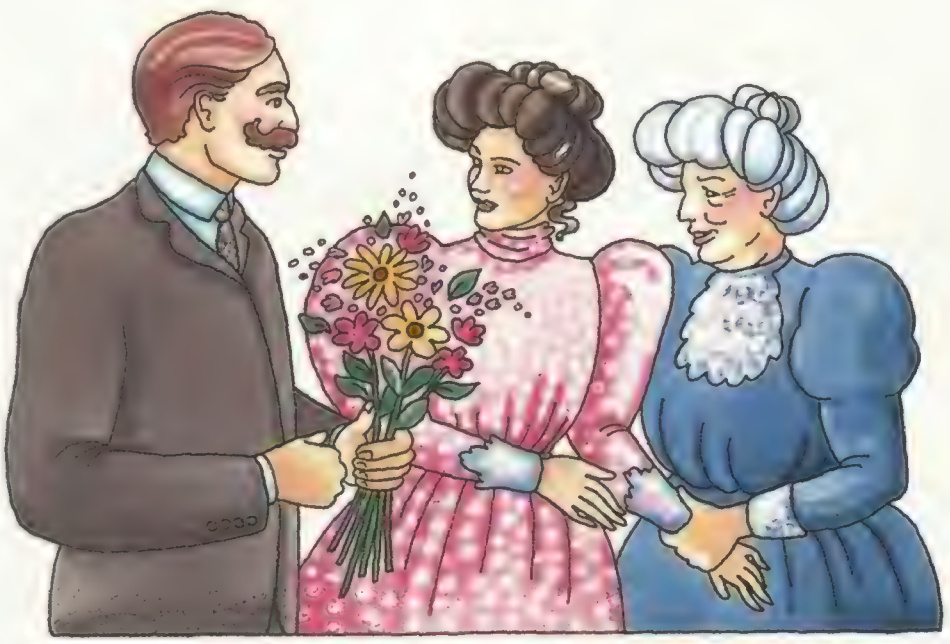
Harvey Girls were considerably more than mere hashslingers. Training was rigorous. Keith L. Bryant jr., in his history of the Santa Fe, noted: "On her first assignment at Ash Fork, Arizona, Laura White learned to serve full meals to 16 people in 25 minutes, to keep the cutlery and china polished, and coffee cups always full. There would be no frayed napkins, nicked cups, bent silver, broken toothpicks or conversation with customers while a train waited."

Meals at an early Harvey House cost a mere four bits in the dining room and less at the counter. Wrote James Marshall in his *Santa Fe—The Railroad That Built an Empire*: "For 50 cents you got all you wanted of the finest eatables money could buy, including thick steaks for breakfast, with eggs atop if desired. These, with a platter of hashed brown potatoes, formed a firm foundation for the ensuing six-high stack of pan-sized wheat cakes with maple syrup, topped off with apple pie and coffee."

After that, you want to look at the four-to-five-course dinner menu? Here's a sampling from 1888, but be warned—the price had risen to a staggering 75 cents: bluepoints on the half shell, filet of whitefish with Madeira sauce, young capon, roast sirloin of beef au jus, pork with applesauce, stuffed turkey, salmi of duck, English-style baked veal pie, prairie chicken with currant jelly, sugar-cured ham and pickled lamb's tongue, all accompanied by seven vegetables, four salads—including lobster salad au mayonnaise—and a wide variety of pies, cakes and custards, finished off finally with various cheeses and Fred Harvey's famous coffee. After meals like that, paeans of praise rose like savory smoke from Harvey House kitchen chimneys.

In addition to lavishing on the inner man the best victuals money could buy, Fred Harvey brought system and order where before there had been chaos. At the last telegraph stop before a Harvey restaurant, the conductor wired ahead the number of passengers and their dining preferences—lunch counter or dining room. A mile or so from the depot the engineer tooted his whistle to alert the chef and the girls; by the time the passengers had detrained and followed the white-coated porter as he banged on a big brass gong, the first course was on the table.

As the passengers, usually eight to a table, dug in, a waitress took their entrée and drink orders. Then the "drink girl" arrived and poured each diner's libation —coffee, hot tea, iced tea or milk. The guests looked at one another in surprise: *How does she know?* No one remembered the waitress fiddling with their cups when she took their orders, but in fact she had been using Harvey's cup code: right side up in the saucer meant coffee; upside down, hot tea; upside down but tilted against the saucer, iced tea; upside down and



Despite the watchfulness of indomitable chaperones, 5,000 suitors still managed to win their Harvey Girls.

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removed from the saucer, milk. It worked—unless some fidgety diner began playing with the crockery.

Besides offering quality and service, Harvey operated on the premise that the customer was always right—up to a point. Customers at his restaurants did have to abide by several rules, all having to do with gentlemanly behavior. One evening in 1883, a band of whooping cowpokes on a drunken tear rode their ponies into the barroom of the Castañeda Hotel in Las Vegas, shot up some bottles arrayed behind the bar, then loudly and profanely demanded eats and booze. Harvey happened to be in the dining room. A wiry, compact man with a nervous manner, he was nonetheless not to be trifled with. Appearing in the doorway, he raised a white-gloved hand and said in cool, autocratic tones, "Gentlemen, ladies are here. No swearing or foul language is permitted. You must put up your guns and leave quietly at once." Sheepishly, the cowhands holstered their six-shooters and quietly walked their horses outside. To show that he held no grudge, Harvey treated them to a meal, with lots of black coffee, but insisted that they don coats before entering the dining room. (It was his other inviolable rule that no man would be served in a Harvey House unless wearing a coat. If he did not have one, the house would be more than happy to lend him an alpaca jacket.)

In 1892, with the inauguration of the California Limited from Chicago to Los Angeles, a new and unsympathetic management began running railroad-owned dining cars. Harvey went to court to protect his depot-based restaurants. The railroad backed down and in 1893 signed a contract that turned over dining-car service to him. It wasn't a bad move. True to Harvey tradition, the dining cars made little if any profit. But they pulled in passengers in record numbers.

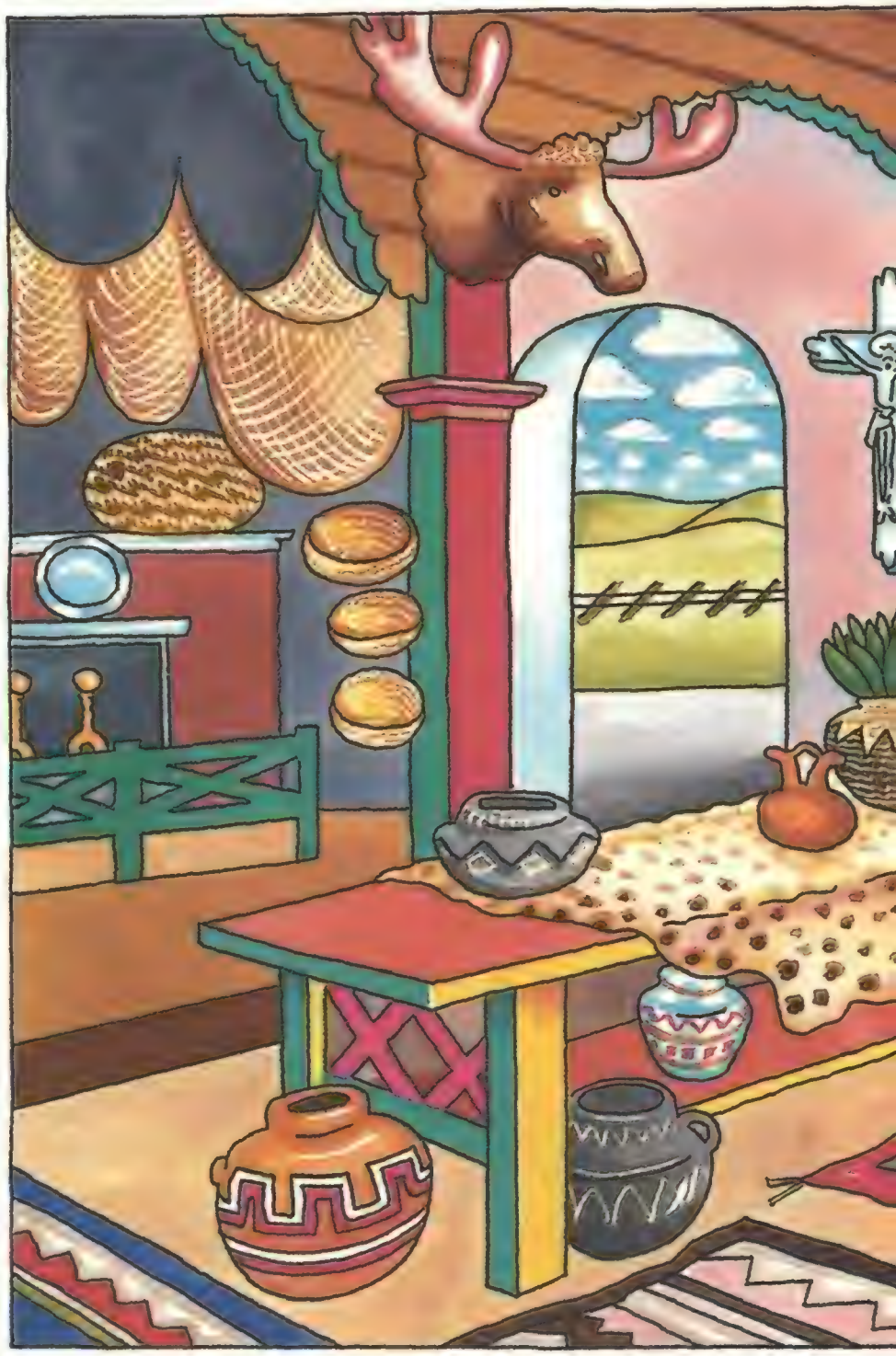
Resorts, shops and a fine arts collection

By the turn of the century, Harvey, his two sons and a son-in-law had begun to reach out toward one of his early dreams—luxury hotels in resort areas such as El Tovar on the rim of the Grand Canyon. They also broke new ground by establishing gift shops in many of his depot restaurants. In places like Chicago and Kansas City, high-priced items and expensive jewelry were sold. In the Southwest, the emphasis on handmade Indian blankets, rugs, jewelry and pottery brought prosperity to Indian artisans and was so successful that the Santa Fe incorporated Indian motifs into its advertising and merchandising. The Harveys also developed an Indian Department, headquartered in Albuquerque, that helped revive and preserve the ancient tribal arts of the Hopi, Navajo and Zuni. Out of this effort came the Fred Harvey Fine Arts Collection, thousands of pieces of Indian and Spanish Colonial ethnographic material, most of which was given to the Heard Museum of Phoenix.

In the midst of this ambitious program, on February 9, 1901, Fred Harvey passed away. Ailing seriously, he had turned over management of the family business to his sons and son-in-law, who carried on the old tradition. At the time of Fred's death, the chain included 15 hotels, 47 restaurants, 30 railroad dining cars and the food service on the San Francisco Bay ferry system. Expansion reached a zenith in 1917, when 100 Harvey eating houses ranged from Chicago south to Galveston and west to the Coast.

From that high point the chain gradually declined, largely because many other fine restaurants opened

It was Harvey's son-in-law and an employee, Herman Schweizer, who introduced Indian arts to his shops.



as the cities grew, competing for Harvey's patrons. World War II brought many of the old Harvey Houses back to life—along with a lot of retired Harvey Girls—to feed hungry soldiers, sailors and airmen traveling long hours on troop trains. But after setting some remarkable records—more than 30 million meals served in 1943, for example—the greatest chain of eating houses the nation had ever known went into a second, and ultimate, decline with the return of peace, done in by the same simple truth that killed the passenger trains—almost nobody was using them anymore.

The Fred Harvey Company still survives as part of a San Francisco-based conglomerate, Amfac Inc., operating a number of resort facilities, notably in Arizona, California and Hawaii. But the superlative necklace of restaurants that Fred Harvey strung along the tracks of the Santa Fe railroad is gone. And its passing deserves an epitaph.

William Allen White put it straight from the shoulder when he wrote, in the editorial columns of his Emporia *Gazette*, that Harvey food "is the best in America." One early historian summed up Fred's contributions in this way: "Harvey eating houses served as schools to all the Southwest [so that] rivals could no longer persevere in their barbarian ways." The best tribute may have come from Carla Kelly, a modern writer, who obviously drew on that last comment when she added, "Barbarism has never been able to compete with a well-cooked steak and a pretty girl to serve it."

The profit motive was hardly lacking, but fostering tribal skills focused attention on a rich culture.

Many stacks discharge by-products of combustion, but this one at a mill in Decatur, Illinois, emits steam generated in the drying and processing of corn. Scrubber system takes most particulates from steam.

By Robert Wernick

Where there's fire there is smoke—and usually a 'chimney'

Six-flued chimney on a new California inn has brickwork like a 200-year-old English manor house.

Everyone blames smokestacks for pollution these days, but they are one of the most effective antipollution devices ever invented

The smokestack makers of the world held a convention in Venice last year. At times it seemed like the huddling of an endangered species. "The Swedes are after us," said Professor F. Johnsen of Denmark. "They say we are destroying their forests." "Everyone is after *us*," said Mr. Max Beaumont of England. "Every time a tree or a fish dies in Europe, we get the blame."

Venice was an appropriate venue for this meeting. In the brief periods when they could see anything at all through the circumambient smog, the participants could see across the lagoon the smoking chimneys of Mestre and Marghera, where the Italian government a generation ago installed oil refineries and chemical plants to provide an industrial base for the region's economy and keep Venice from becoming merely a museum city. Now the Venetians angrily watch their monuments being eaten away by sulfuric acid in the air, and they are loudly putting all of the blame on Mestre and Marghera.

It does the smokestack makers little good to point out that if all the refinery chimneys were pulled down, some sulfur dioxide would still be coming out of the houses in Venice itself. Though like London, where thousands of people died as a result of the noxious effusions from millions of home heating units burning soft coal, Venice has spectacularly cleaned up its air by requiring all householders to convert to oil heat. As a result, the people are healthier—but their buildings and their landmarks are still sick.

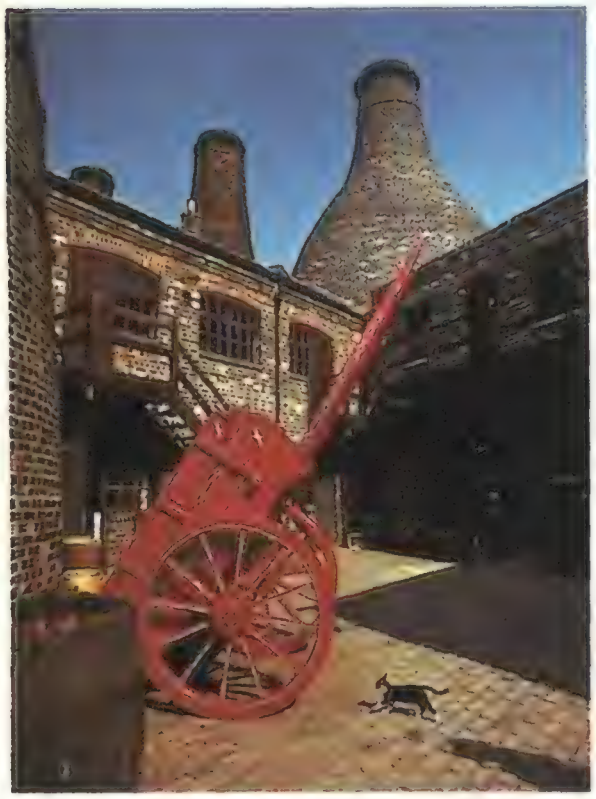
It is easier to direct indignation at giant chimneys lording it over miles of countryside than at millions of inoffensive citizens heating their homes and driving automobiles. So in Venice, as in Pittsburgh, the Ruhr valley and most other industrialized parts of the world, it is the smokestack that has become the symbol of a dirty, decaying culture, an eyesore and an embarrassment in this squeaky-clean era of microchips and solar energy.

But sometimes people who condemn smokestacks as purveyors of pollution overlook their reasons for being in the first place. If you insist upon using electricity, you still need utility plants, and they require smokestacks. If you want to fly in planes, you must have aluminum mills, and they need smokestacks. If you want to read magazines, you need pulp mills, and they have smokestacks, too. Take away smokestacks and you take away most of the comforts and conveniences, and many of the necessities, of civilized life.

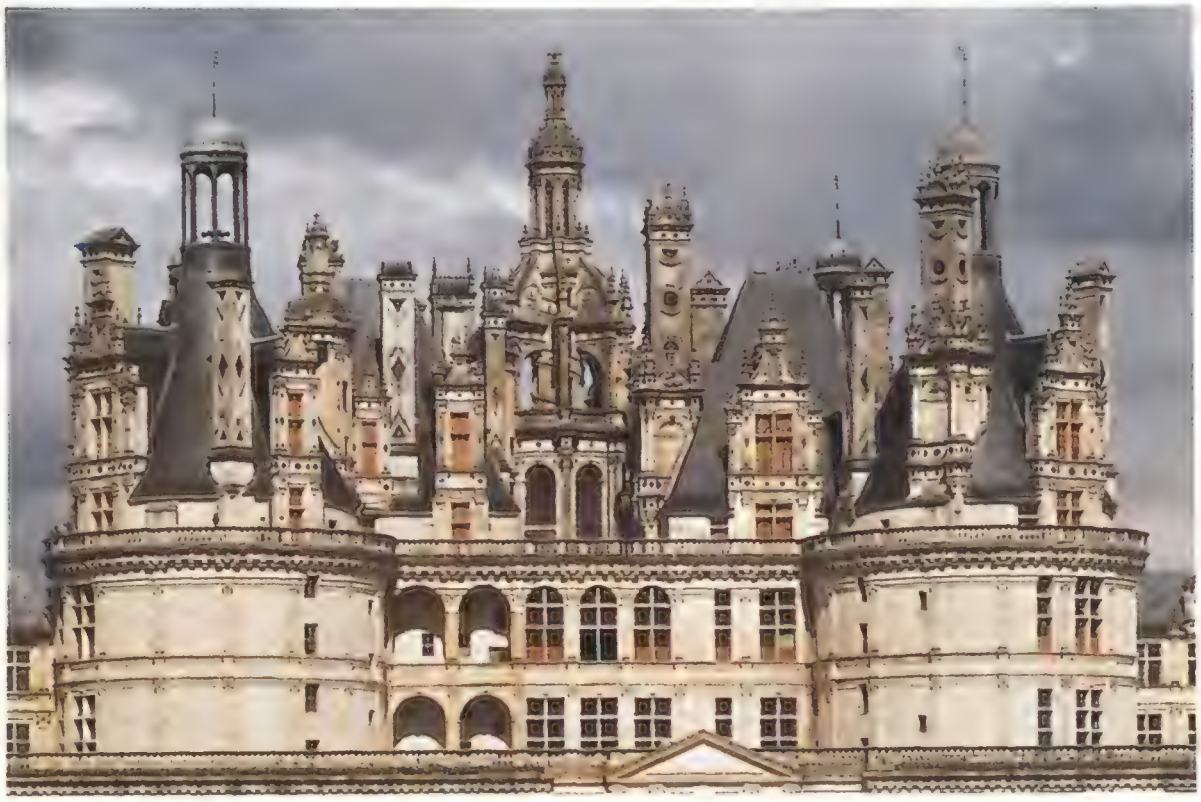
A smokestack, after all, is only a chimney grown tall—more than 100 feet tall, according to the definition of the Comité International des Cheminées Industrielles (CICIND), the people who met in Venice. And the chimney is both the oldest and one of the most important antipollution devices in human history. When *Homo erectus*, or whoever, discovered the use of fire some half-million years ago, he also discovered that where there is fire there is smoke. And when, in the course of time, he took fire indoors for cooking meals and keeping the family warm in winter, he took the smoke in with him, to sear his lungs and

Ornate Tudor-style twins enhance Saint Osyths Priory, Essex, England.

Graceful, towerlike chimneys stud roofs of civic complex outside Suleymaniye Mosque (top) in Istanbul.



Necks of bottle kilns crown England's Gladstone Pottery, now a museum.



Château of Chambord, begun in 1519 by Francis I, mixes turrets, high-pitched roofs and 365 chimneys.

eyes and expose his body to carcinogens. He did the best he could to get rid of the smoke by making holes in the roof or slits in the walls, which remained the standard human practice for tens of thousands of years and still is in many parts of the world today.

It took mankind a long time to develop the chimney. In the warm climates of Egypt and Mesopotamia, where civilization began, the heating of houses was not an urgent problem. Such at least was the general scholarly opinion until a French expedition recently published its findings after the excavation of the great lost city of Mari on the upper Euphrates revealed a palace studded with chimneys nearly 4,000 years old. The Romans developed elaborate chimneys in conjunction with their ingenious hot-air heating systems. A current theory is that the idea of the chimney was brought to western Europe from the East more than 1,200 years ago by Syrian, Egyptian and Jewish traders.

Typical of 16th-century Turkish architecture, chimneys vent fireplaces used for heating university facilities.

Moorish-style stack vents cooking stove in house in Olhão, Portugal.

Detail of Carpaccio's *The Miracle of the True Cross* shows funnel-shaped chimneys in 15th-century Venice.

Turretlike chimneys vent kitchen of Fontevrault Abbey in western France.

For centuries chimneys remained the prerogative of the wealthy and powerful. In the 11th-century reign of Norway's King Olaf III, one of the kingly acts deemed worthy of record was the installation of corner fireplaces with chimneys in the royal residence. Perhaps the oldest chimneys still standing are in the kitchen building of the 12th-century abbey of Fontevrault, where Henry II of England, his wife, Eleanor of Aquitaine, and their son Richard the Lion Hearted are buried. The abbey's five huge wood-burning fireplaces, used for cooking and smoking meat and fish for a monastic community of several hundred persons, are ingeniously connected to 20 pencil-shaped stone chimneys (above) that blend harmoniously with the structure's Romanesque architecture.

Other early chimney makers were less skillful, or had fewer resources, than the monks of Fontevrault. They used rude methods like sticking a barrel with

Steel-mill stacks in Pittsburgh during 1890s belched the clouds of smoke that gained city its notoriety.

both ends removed through a hole in the roof, or building a framework of notched branches covered with clay, as was later to be done on the American frontier. If they were rich enough to afford stone or brick, they generally made the chimneys so large that almost all the heat would go straight up, and anyone roasting his front at the fire would be sure of freezing his back. Design improved gradually. As people learned they could heat individual rooms and not have to huddle together in a great hall or kitchen, they began to build more and more chimneys. In the economic boom of the 15th century, Europe went wild for them, as you can see documented in two of the era's great works of art.

In the calendar that forms part of the book called *Les Très Riches Heures du Duc de Berry*, made for the Duke by the Limbourg brothers in the early 1400s, the page illustrating October shows the Louvre Palace as it was in the time of Charles VI—a gleaming, sprawling, Gothic structure with a chaos of chimneys popping up here and there all over its acres of roof, wherever the King and his court wanted a warm place to eat or sleep or dance. The page for February presents a modest peasant hut. It, too, has a chimney, made of braided wicker, presumably daubed inside with mud to make it airtight and keep it from catching fire.

Chimneys outlined against the sky

At the end of the century, Carpaccio's *Miracle of the True Cross* (p. 143) reveals how the fad had spread to middle-class households. The "miracle" of the title takes place on the left side of the painting, on a balcony overlooking the Grand Canal where the Patriarch of Venice is healing a lunatic. The event is almost lost in the vast panorama of bright bustling city life, capped by a forest of tulip-shaped chimneys jutting sharply into the sky, tangible evidence of the newfangled comfort that the merchants of Venice could afford.

Such chimneys were journeywork, stuck more or less at random through the roof wherever they were needed. During the Renaissance, architects began discovering the decorative possibilities of chimneys, and the country houses of Tudor England and Valois France were soon crowned with fantastic shapes and patterns. The Château of Chambord (p. 142), which Francis I started in 1519, has 365 chimneys, each different, each decked out with sculpted shields, wreaths, columns, animals or nymphs.

Historically, chimney building had been an empirical art, the builders of one generation passing on their closely guarded secrets to the next. It was not until the end of the 18th century that a colorful inventor named Count von Rumford dispelled some of

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Capped pipes cram chimney of older building in Chicago containing apartments equipped with stoves.

London chimney sweep carries tools of trade to work. England banned using boys to climb chimneys in 1875.

the mystery. Formerly Benjamin Thompson of Rumford (now Concord), New Hampshire, Rumford had been forced to leave the United States in 1776 because of his loyalist sympathies. A physicist, he spent some time in the British Civil Service before becoming the war and police minister of Bavaria. His scientific investigations led to the basic design of the fireplace and chimney as we know it today: a combustion chamber with slanted back to radiate heat into the room; a narrowed opening above the chamber, outfitted with a damper to regulate the draft; a flue to convey smoke and gases up the chimney; and a "shelf" at the bottom of the flue to prevent downdrafts from blowing smoke into the room.

Eventually the chimney became a universal symbol of warmth, protection and human solidarity. The traveler, in days when travel was slow and painful, could espy the smoke rising from far off and know that human fellowship was waiting for him, ready to refresh and revive. As he approached a town he could count the smoking chimneys and know how many households were active.

Chimney counting could have its sinister side as well. Once Spain's grand inquisitor took a colleague up to the top of a tower in Seville on a Saturday and said, in effect, "You see how cold it is. Yet how many chimneys do you see smoking?" He was referring to the houses of Jews who had converted to Christianity in fear for their lives, but could not bring themselves to light a fire on the Jewish Sabbath and were thus unknowingly marking themselves out for the stake.

In 17th-century England, a distinctly unpopular tax was the one that charged ten shillings for every chimney in the land. The revenue officials loved it because it is very difficult to conceal a chimney. But the people thought it grossly unfair—understandably, since a rich man was unlikely to have all that many more chimneys than a poor one. It was considered one of the finest accomplishments of the Glorious Revolution of 1688 that it got rid of this hated levy.

Count Rumford's 18th century may be considered the golden age of chimneys. It was a time when, all across the green peaceful lands of England, Holland and America, neat brick chimneys smoked comfortably over neat brick houses, when city dwellers no longer had to shiver in bed from fall to spring but learned how to heat their apartments, resulting in all those chimney pots sprouting up on the roofs—still a picturesque sight in the older quarters of cities like London and Paris.

Mr. Wernick's many contributions to SMITHSONIAN *range from articles on the Icelandic sagas and Babar the elephant to a profile of the artist Paul Klee.*

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Rising 1,250 feet into the sky, smelter superstack built 15 years ago in Sudbury, Ontario, is world's tallest.

The chimneys inevitably filled up with soot, however, and had to be cleaned out. It might have been done reasonably well with long brushes, but it was considered more efficient and economical to use "climbing boys." They had to be small, for the flues were sometimes no wider than the length of two bricks, and though by law in England the boys had to be at least 8 years old, they were often no more than 4. Up they went, crying and complaining, sometimes prodded from below by pins stuck into their bare feet. They spent their lives caked in black dirt and they generally died young from inflammation of the lungs or from "chimney-sweeps' disease," which was cancer of the scrotum. But it was not until 1875 that climbing boys were banned by Parliament.

Why stacks grew and grew

The Industrial Revolution sent the chimney up and up, transforming it into a smokestack. Height was a matter of sheer necessity. Many factory owners had little regard for occupational safety or the comfort of their workers, but it was readily apparent that work could not be done well if men and women were surrounded by thick clouds of smoke or the factory was in continual danger of catching fire. At first they tried to blow the smoke away with fans, but that only blew it into neighboring houses and factories. So they were driven to constructing freestanding chimneys, and these stretched higher and higher. Factory owners knew that there was a correlation between the height of a chimney and the intensity of the draft it created. They knew that the volume of the gases to be exhausted, the temperature of those gases and the temperature of the outside air were variables that also contributed to that intensity. And they discovered what had escaped home builders through the centuries, that downdrafts are not caused by mysterious forces. They are caused simply by the fact that winds meeting an obstacle, like hills or tall trees or buildings, go up them on one side and down on the other. So smokestacks had to be built higher than the adjacent trees, buildings or hills.

A smokestack is almost always round—a cylinder or, more often, a truncated cone—because that is the best aerodynamic shape to handle winds buffeting it from without and hot gases that may be swirling upward at a rate of 60 mph within. About what it should look like, there have always been two schools of thought. Some have preferred to put up their smokestacks plain and bare, naked expressions of power rising from the earth, a thrill to the owner's heart and, of course, the least expensive way of doing things. But others have wanted their stacks more or less elaborately disguised, decorated, beautified. Even today there are

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smokestacks covered with colorful patterns or sculpted to look like medieval bell towers or columns from the portico of a Greek temple. In Houston, the three stacks of the Anheuser-Busch brewery are designed to look like a tall, skinny, windowless building.

Whatever they looked like, smokestacks had to be built to last. If a factory's stack stopped working, so did the factory. Consequently, industrial towers were constructed to withstand hurricanes, earthquakes, explosions, the steady pounding of rain, and the corrosive effects of hot gases shooting up their insides. In the 19th century they were made of solid masonry, brick and sometimes stone; the masonry might be several meters thick. One can appreciate their staying power by driving almost anywhere on the back roads of America or Europe and coming across the remains of long-abandoned factories. Nothing may be left of the main building but an outcropping of foundation stones and some rusted fragments of machinery. But the smokestack still stands.

Today, smokestacks are made of reinforced concrete, steel, fiberglass. The fundamental design is very simple: an outer shell to protect against the elements and a lining impervious to the smoke going up through it. In many big modern stacks, the shell and lining are separate structures; the air in between helps insulate against abrupt changes in temperature and provides space for inspection and repair crews to operate. Some giant stacks have, four, five or even more flues inside.

The choice of materials, dimensions and safety devices poses formidable technical problems. They involve complicated laws of dynamics affecting an upright cylinder subject to the creeping and stretching caused by radial, axial and circumferential stresses. "When in doubt," says Mike Pritchard, an Exxon engineer whose term as president of CICIND ended in April, "the rule is, go for safety." The biggest threat is wind. Not what they call the "long-wind," the ordinary blasts we feel anytime we are outdoors; well-anchored, well-built stacks will not be pushed over even by tornadoes. It is rather the crosswinds that are set up when the onrushing air, blocked by the stack, has to divide its flow to jostle its way around the stack. This movement sets up a succession of little vortices on each side, and the vacuums at the heart of these vortices pull the stack now one way, now the other. Every freestanding cylinder has its own harmonic, a frequency at which it will start to vibrate like a tuning fork. When a 250-foot-high chimney starts to "shudder" twice its own diameter in alternate directions, it is a terrifying sight for anyone who happens to be standing nearby. Max Beaumont, a chimney manufacturer in Mere Wiltshire, England, remembers climbing a 300-foot smokestack ladder in a roaring wind one night to attach guy-ropes that controlled such shaking. Most big chimneys these days have some kind of antivibration device, such as fiberglass bands that spiral around the shell.

For a long time, the thing smokestack makers worried most about was finding an economical way to make chimneys that were solid enough on the ground and high enough in the air to establish a draft that would keep the fires roaring. But as industries expanded and populations grew and the demand for electricity mushroomed, those fires began to spew into the atmosphere unprecedented amounts of pollution.

A threat to forests and lakes

Responding to criticism from environmentalists, smokestack makers first thought that the simple answer to pollution was to make the chimneys higher, carrying the noxious material to upper layers of the atmosphere where it could be harmlessly dispersed in infinitesimal fragments and drift away. This did wonders for the local communities; fishing villages could welcome giant oil refineries into their midst and stay clean as well as prosperous. But unsettling reports soon began to come in from more distant places. CICIND members speak of the tallest smokestack in the world, the 1,250-foot one built for a nickel and copper smelter in Sudbury, Ontario (p. 148). Nickel and copper smelters are notorious for the amount of sulfur dioxide they put into the atmosphere, and three smaller stacks at Sudbury had been blamed for damaging vegetation and wildlife for miles around. The new stack, hailed by its builders in 1972 as a landmark in pollution control as well as a marvel of structural efficiency, has been blamed for threatening vegetation and waterways hundreds of miles downwind.

For years, factories and utilities in the United States have also been pouring pollution into the atmosphere.

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When Congress passed the Clean Air Act of 1970, it required the Environmental Protection Agency to stipulate standards for levels of sulfur oxides and other damaging emissions. It also established clean-up deadlines, required new plants to adopt modern abatement technologies and, in a 1977 amendment, forbade the use of tall stacks as an alternative to emission controls. Over the years, environmentalists and scientists have faulted the EPA on its enforcement of the Act's provisions, but Canada, for its part, has embarked on a comprehensive program to halve its sulfur dioxide emissions by 1994.

How to make smoke a lot cleaner

Pollution varies from stack to stack, depending on what is being burned, processed or refined. Clean-up technologies vary, too. An important device for limiting sulfur oxide emissions is the flue gas scrubber, which transforms the offending matter into sludge or dry particles that can then be disposed of. Particulates are removed from smoke with filters or precipitators; hydrocarbons are burned off.

Scrubbers can have an unexpected esthetic effect. They may produce smoke that looks creamy white, leading an unwary observer to the conclusion that it is quite clean. Not so. Though scrubbers can be very efficient, getting rid of all but a few percentage points of the pollutant matter, the remaining pollution can do damage. In the form of acid rain, it destroys life and sometimes even upsets international relations.

Acid rain is not a new phenomenon, however. The name was coined in 1872 by English engineer Robert Angus Smith in a work called *Air and Rain: The Beginnings of a Chemical Climatology*. He applied the term to the "acidifiers and organic substances of combustion processes existing in precipitation." Acid rain contains heavy concentrations of sulfuric and nitric acids, formed when emissions of sulfur and nitrogen oxides produced in the combustion process combine with water vapor in the atmosphere. It has been blamed for everything from troutless streams in Maine to the high mortality rate from senile dementia in southern Norway. Acid rain now occurs all over the world and, closer to home, has become a serious bone of contention between the United States and Canada. Waterways and structures, forests and wildlife are potential victims. Even smokestacks may be endangered, for there are reports of steel reinforcing rods corroding inside the concrete shells of chimneys. A likely cause is a loss of alkalinity in the concrete that makes it less resistant to moisture, causing it to deteriorate and expose reinforcing rods near the surface to corrosion.

Smokestack makers are paying close attention to the new techniques that are being proposed for suppressing the emissions that cause acid rain. There is a Swiss process for grinding coal so fine that sulfur particles can be removed mechanically before burning. There are methods of combustion that fix the sulfur in the form of sodium sulfide, which does not burn and therefore cannot go up in smoke. There is a way of spraying in chemicals to combine with sulfur during combustion, converting it to forms that can be removed before they reach the chimney.

The trouble with all of these processes is the tremendous expense of converting to any of them, and the fact that some have not been tested long enough to determine their effectiveness. Enthusiasm for clean air has its pocketbook dimension. People in the Midwest will weep freely for maple trees dying in Vermont, but when they hear that cleaning up the smoke at local power plants may threaten their jobs or increase their utility bills, Vermont suddenly seems far away. Most public opinion polls, however, show overwhelming support for antipollution measures.

The smokestack makers have little doubt that under the pressure of necessity both technical and monetary problems can be solved. They expect to be in business for a long time to come. Ray Warren, who makes smokestacks in Atlanta, is typical. "As long as you are burning a fuel," he says, "you are going to have waste, for no combustion process is perfect. And the only places to put that waste are land, sea and air. Land and sea pose their own problems, as the chemical and nuclear industries have been learning over recent years. Only the air is left, and the only way to get to the air is through some form of smokestack—hopefully a nonpolluting one."

Everybody needs smokestacks. High-rise apartment buildings need them, chastely tucked away in their middles, for their furnaces and incinerators. Nuclear plants, which do not dare let their own wastes escape into the air, need start-up boilers and these need smokestacks. Some day, perhaps, new miracle processes, long foretold, will come into the world of reality, and we will get most of our energy from the sun's rays or the hydrogen atom or some other immaculate source. When that day arrives, perhaps CICIND will disband. But its handiwork will linger on. Solidly anchored, too bulky and too costly to tear down, fortified against wind and weather, smokestacks will no doubt be sticking up into the clear skies of the 22nd century, reminders of the time when they did the dirty work for a great industrial age.

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By J. D. Reed

Some ado about who was, or was not, Shakespeare

No need to round up the usual suspects; the latest hue and cry concerns the Earl of Oxford

Meanwhile, in Stratford, a statue of the poet seems to brood bemusedly in a park overlooking the River Avon.

The discrepancy is one of those twists of fate that better belong in an O. Henry story. But the fact remains that, though William Shakespeare wrote more than 36 world-famous dramas richly portraying the range and depth of human nature, we know almost nothing about the man who created them. Despite the intense research by legions of historians, scholars and biographers over three centuries, what we know—and can prove for certain—about the greatest literary genius in history can pretty well be jotted down on a file card. He was born in Stratford-upon-Avon, the son of a glover, in April 1564. He married Anne Hathaway when he was 18 and they had three children before he was 21. He acted in a number of plays and seems to have been liked by those who knew him. He eventually owned houses in Stratford and London as well as shares in two theaters, the Globe and the Blackfriars. Before his death in 1616 he'd returned, more or less permanently, to the home of his youth, where he became a comfortable burgher with extensive landholdings. There is not a single word of the plays or the poems that is definitely in Shakespeare's handwriting (only six of his signatures survive on legal documents).

The chasm between the fame and richness of the works, and the poverty of information about the author, has fueled a curious, and sometimes a perverse, controversy that has raged for more than a century. Since the mid-19th century, a hardy and vocal band of disbelievers has argued that someone other than the Stratford man created the poems and plays attributed to, or presented as, the works of William Shakespeare. To many people, and with some reason, the debaters are fair comic game. As the Shakespearean actor Ian McKellen puts it today, "Some people, intellectual snobs perhaps, like to think that the philosopher Francis Bacon wrote

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Beruffled Edward de Vere, Earl of Oxford, presents noble look in this 19th-century engraving. A well-traveled courtier and poet praised by Queen Elizabeth I, he frequented the high world that Shakespeare wrote about, and some incidents of his life offer provocative parallels with plots and characters in the plays.

the plays. Then there are social snobs who like to think that the Earl of Oxford wrote the plays. And no doubt somewhere there's a keen viewer of *Masterpiece Theatre* who thinks that Alistair Cooke wrote the plays." Most lovers of the works, moreover, accept the incumbent candidate, or, failing that, agree with McKellen that the plays were written either by a man called Shakespeare or by a man calling himself Shakespeare.

Not so, says author and scholar Charlton Ogburn. For many years a passionate and tireless proponent of the Earl of Oxford theory, Ogburn is not about to be deterred by a wisecrack. Oh, no, think those who have been down this path before, here comes another daffy theory. Fortunately for lovers of Shakespeare and history—and for anyone who likes a lively row (for Ogburn is a combative soul)—the former State Department official known for his books (among others a famous World War II narrative, *The Marauders*, and such nature works as *The Winter Beach* and *The Adventure of Birds)* is in full possession of his highly critical faculties and well worth listening to.

For one thing, Ogburn's 892-page book, *The Mysterious William Shakespeare* (Dodd, Mead, 1984), provides a deft and merry paper chase through the best and brightest arguments of the anti-Stratfordians, as the doubters designate themselves. For another, whether you accept his thesis or not, Ogburn's tome is a marvelous transport to Shakespeare's world and what is—and isn't—known about his life, not to mention the range of his matchless characters and the precise extravagances of his vocabulary. Best of all, in arguing his case Ogburn brings to center stage a brilliant and flamboyant man most of us have never heard of, let alone thought about, Edward de Vere, the 17th Earl of Oxford (above). An aristocrat of dwindling fortunes and a dandy, he sailed his own ship in the Spanish Armada, and was a notorious ladies' man who may have been one of Queen Elizabeth's lovers. Whether

Plainly clad Shakespeare has slightly piratical look in this portrait possibly painted from life in the early 1600s. During his career, unlike other actors and playwrights, he did not bring his wife and children to London, but periodically traveled back and forth to Stratford to be with them and take care of his business affairs.

he wrote the plays or not, Oxford is a fascinating Elizabethan, at the least worthy of a robustious and revealing historical novel.

Class is at the core of Ogburn's heretical thesis. He argues, more effectively than the many who have argued it before him, that humble Will Shakespeare (above) from rustic Stratford was too parochial, too unlearned and far too common to have written most of the plays. The author of *Richard III* and *Hamlet,* notes Ogburn, had a vocabulary in excess of 20,000 words, not to mention a firsthand knowledge of falconry, customs of the Danish court and of French and Italian cities. He used more than 100 musical terms in the plays as well as the names of 200 plants. "We should have to conceive that a writer [of the dramas]," writes Ogburn, "would choose to lay them [*The Merry Wives of Windsor* is the only exception] in a world foreclosed to him—the world of the nobility—of which his knowledge would have been secondhand at best."

Assuming that Shakespeare of Stratford did *not* write the plays (an assumption most Shakespearean scholars are not willing to make) then, Ogburn believes the university-educated Oxford, a celebrated poet in his youth and for much of his life a favored courtier, exactly fits the bill as putative author. Oxford traveled to Padua, Venice and other foreign settings of the plays, while the Stratford man may never have left the southeast of England. Oxford's marriage, his affairs and his troubles with a powerful in-law contain highly specific resonances of *Othello, Hamlet* and *Love's Labour's Lost,* among other works. The Earl's noble rank and closeness to the throne, says Ogburn, did not allow him to be known as a writer for the public theater under his own name. His works would have been subject to more stringent censorship than they

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would had they been written by a common man. Additionally, if he created an unattractive character who resembled someone in the court, the playwright could have been in trouble. Therefore, says Ogburn, with help from high-born relatives Oxford found a willing stand-in: low-born William Shakespeare, a sometime actor who, for a handsome recompense, pretended he was the author.

Stratfordians have an arsenal of objections to Oxford—or any other candidate for that matter. For one thing, while most serious academics agree that Shakespeare's biography hinges on few documents and is fraught with difficulties, there are a number of references to Shakespeare as actor and author by those who would have known him. Even Ben Jonson, whose critical reputation in 1616 outstripped Shakespeare's and who intended to keep it that way, could not help praising Shakespeare in a famous eulogy published in the First Folio in 1623 (p. 160). The first collected volume of his works, it was signed by two of his fellow actors and entitled *Comedies, Histories, &*

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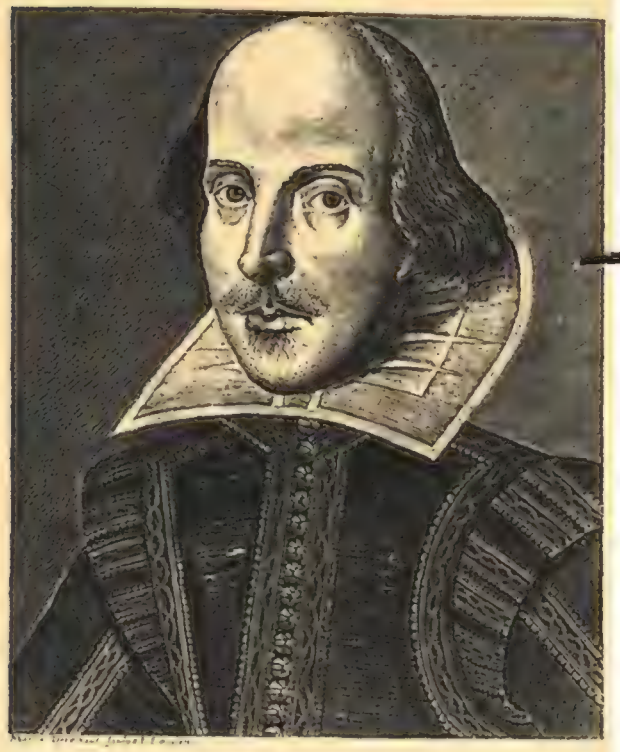

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Tragedies. There, Jonson refers to the author of the plays as the "Sweet Swan of Avon," and concludes "He was not of an age, but for all time." Orthodox scholars see no nefarious plot in the fact that so few mentions exist of Shakespeare during his lifetime. "He did not in his own day inspire the mysterious veneration that afterward came to surround his works," writes celebrated Shakespearean biographer Sam Schoenbaum in his seminal study, *Shakespeare's Lives.* "No playwright in that day did, and certainly no actor." Stratfordians argue that Oxford's death in 1604 (12 years before Shakespeare's) leaves a dozen plays unaccounted for. The academics also point out that a wide-ranging conspiracy of silence to conceal Oxford's authorship, involving, as it must have, all of both Elizabeth's and James' courts as well as actors and writers is implausible.

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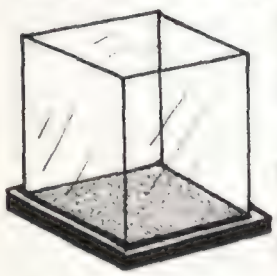

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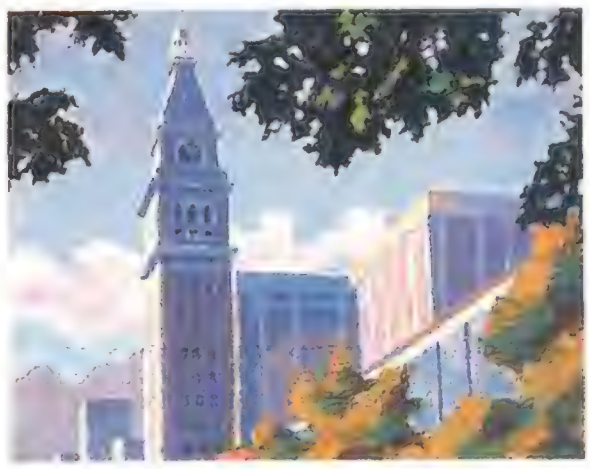

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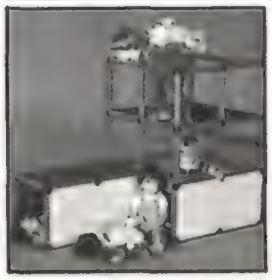

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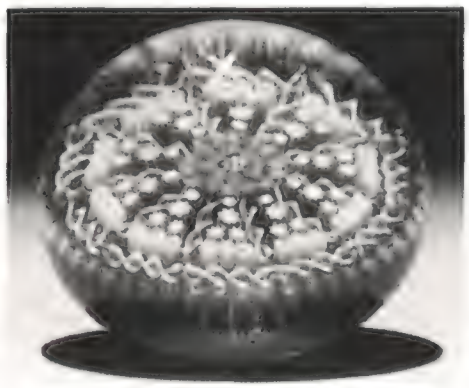

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The most difficult hurdle to clear, in considering Ogburn's candidate at all, is the insistence that the author of the plays must have been a nobleman simply because the plays treat of kings and nobles and high life in general. Nearly all of Shakespeare's theatrical contemporaries, including Ben Jonson, a bricklayer's son, were middle-class men. And authors, even far lesser ones than Shakespeare—a man who may be the greatest creative genius of all time—can convincingly inhabit lives, scenes and experiences other than the ones they were born to. Precisely that is their stock-in-trade. The mark of Shakespeare is that he breathed such individual life into fools as well as princes, footmen as well as thanes.

Still, any reasonable lover of Shakespeare could profitably suspend his disbelief for an hour or two, to journey with Ogburn into the world of Oxford and Shakespeare. Ogburn raises questions about the authorship that perplex and tease. For him, the quest to establish the authorship is an unparalleled intellectual exercise. It is, says the former military intelligence officer, the "greatest manhunt in the world."

Whether he was in fact Shakespeare or not, Edward de Vere, the 17th Earl of Oxford, could have been a royal invention of the playwright. Born in 1550, Edward de Vere was a descendant of a family that had served at the right hand of the English monarchy beginning with the Norman Invasion in 1066. As such, Ogburn points out, Oxford would have attained special knowledge of historical incidents through family lore, and an empathy with the events and characters depicted in Shakespeare's historical plays.

Haunting parallels with Shakespeare's plots, characters and circumstances run through Oxford's life with an unsettling frequency. Some are less than compelling. Oxford was a brilliant youth who received a degree from St. John's College, Oxford,

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at age 14. One of his tutors was his maternal uncle, Arthur Golding, the Latin scholar whose translation into English of Ovid's *Metamorphoses* was used extensively by Shakespeare. Others are mildly interesting coincidences. Another of Oxford's uncles, the Earl of Surrey, introduced blank verse to the English language and, with Sir Thomas Wyatt, the English sonnet form, later known as Shakespearean (three quatrains and a couplet). At the age of 21, after studying law at Gray's Inn, Oxford wrote an accomplished Latin introduction to Castiglione's *The Courtier*, a book that combines romantic attitudes with lessons in Renaissance manners. Later, he "shone at the court of Elizabeth," wrote 19th-century scholar Thomas Babington Macaulay, "and had won for himself an honourable place among the early masters of English poetry." None of Oxford's poems in Latin survive, but a score in English (above) are still available. Written when he was very young, they show a decided and youthful gift; they do not, to most ears, match the great inventive harmonies of Shakespeare's sonnets.

Who taught thee first to sigh, alas, my heart?
Who taught thy tongue the woeful words of plaint?
Who filled your eyes with tears of bitter smart?
Who gave thee grief and made thy joys to faint?
Who first did paint with colours pale thy face?
Who first did break thy sleeps of quiet rest?
Above the rest in court who gave thee grace?
Who made thee strive in honour to be best?
In constant truth to bide so firm and sure,
To scorn the world regarding but thy friends?
With patient mind each passion to endure,
In one desire to settle to the end?
Love then thy choice wherein such choice thou bind,
As nought but death may ever change thy mind.

Youthful sonnet by Oxford does little to explain his high poetic reputation.

William Cecil, the Queen's most powerful minister, was Oxford's father-in-law.

In Elizabethan England, companies of players were patronized by noblemen, and Oxford inherited one such troupe from his father; he later had two companies of his own. Oxford also held the lease on the Blackfriars theater, in which Shakespeare later held a share. As well, the Earl was a munificent patron of writers, including Anthony Munday and John Lilly; a number of books were dedicated to him.

Oxford's boyhood in some ways paralleled that of young Hamlet. His father died when the lad was 12, and his mother apparently remarried three months later. How he felt about it is not known, but he was then sent from home to become a royal ward in the house of Sir William Cecil, later Lord Burghley, a trusted adviser to Elizabeth for 40 years, one of the most important men in England. There, he was close to the center of English political power. In addition, the prudish and materialistic Burghley, as scholars were noting long before Ogburn, is by general agreement the likeliest model for the sententious and boring Polonius of the Danish court.

To contemplate such literary themes as pride and ostentation, Oxford had only to gaze in the mirror. He was a wanton spender who frittered away money, successively selling off inherited properties. He loved

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a grand show, outfitting himself in a seemingly endless array of new silks and velvets. By the time he was 21, a court observer wrote, the "Queen's Majesty delighteth more in his personage and his dancing and his valiantness than any other."

Despite rumors that Oxford was the Queen's lover, her most intense affair was purportedly with the Earl of Leicester, and Leicester could have been the model for the murderous King Claudius of *Hamlet.* At least there was persistent talk that he had plotted to poison his wife in order to take up with the Queen. Oxford would have disliked Leicester in any case, because he was, for a time, the court-appointed custodian of Oxford's inherited estates.

In 1575, Oxford won the Queen's permission to tour the Continent. He visited Paris, Verona, Rome, Venice and Padua, among other cities, which would have given him the eye for detail apparent in *The Two Gentlemen of Verona, Romeo and Juliet* and *The Merchant of Venice.* Two of Oxford's Italian acquaintances were named Pasquino Spinola and Baptista Nigrone, names echoed in that of Baptista Minola, father of Kate in *The Taming of the Shrew.*

Oxford's love life mirrors, to some extent, Shakespeare's preoccupation with jealous husbands, falsely-accused-and-then-forgiven wives. The Earl married Burghley's daughter Anne when she was 15, about Juliet's age. It was a troubled union, but the Earl rejoiced when he received news in Italy that his wife had borne a child. On returning to England, though, he became enraged when he was told that the daughter had been born some 12 months after he had last slept with Anne. The suspicion was reportedly planted in Oxford's mind by a hanger-on, Rowland Yorke. His name, pronounced E-ork, has a resonance of Iago, who poisoned Othello's mind against Desdemona.

An admirer of de Vere, Queen was said to "delighteth more in his personage."

The case, however, turned slightly farcical as well as tragic. Apparently Oxford was somehow later convinced he had slept with his wife, when drunk, under the false impression that she was another woman. The situation was arranged by Burghley, so the story goes, to produce a child and help heal the foundering marriage. This is reminiscent of the plot device that brings Bertram to bed with his wife, Helena, in *All's Well that Ends Well.* In real life, however, it was many years before Anne and Oxford were reconciled.

Estranged from his wife, Oxford took up with another Anne, this one Anne Vavasor, a woman who managed to have three husbands, two of them at once. When she had a son by Oxford, the outraged Queen had the lovers clapped in the Tower of London; whether because of the scandal or out of jealousy nobody could be sure. After his release, Oxford was severely wounded in a sword fight with one of Anne Vavasor's relatives in a London street. There were other set-tos between family retainers, a kind of serialized English version of the Capulets and Montagues.

Even one of Oxford's high-spirited

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pranks came close to a Shakespeare scene. In May 1573, two former employees of the Earl's household accused their ex-master of lying in wait for them in a "raging demeanor," by the highway from Gravesend to Rochester accompanied by three companions. The terrified men accused Oxford and his cohorts of firing "calivers charged with bullets" at them, "whereupon they mounted on horseback and fled towards London." Readers will recognize scenes from *King Henry IV, Part I,* in which Falstaff (p. 173) and other companions of Prince Hal from the Boar's Head Tavern rob some travelers on the highway near Gad's Hill—and Falstaff lies creatively about it. Gad's Hill is along the very same road on which Oxford frightened his former servants.

Ogburn strains harder, however, to make other events in Oxford's life correspond to the authorship. In 1586, when he was 36, Elizabeth awarded the spendthrift Earl a stipend of £1,000 per year for life, at a time when a well-paid schoolmaster earned about £10 a year. The usual explanation is that Elizabeth was

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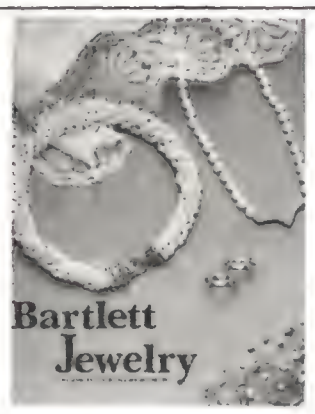

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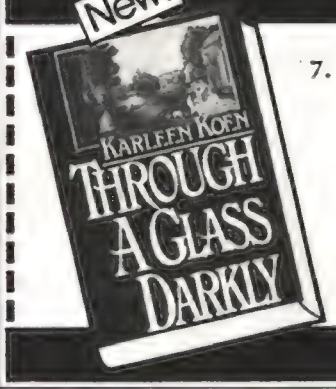

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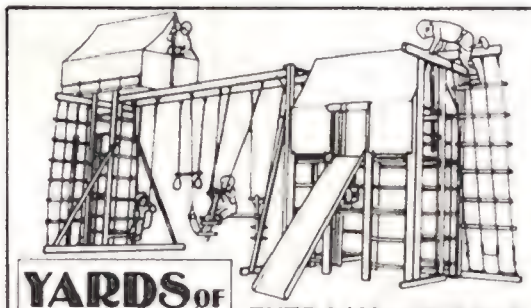

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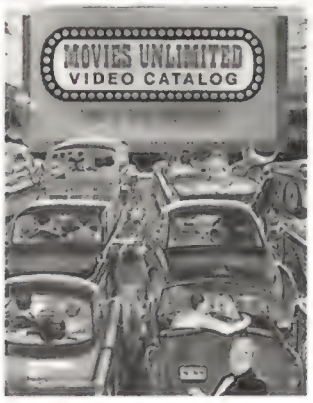

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merely taking care of an erratic, down-at-the-heel relation, a common enough practice of the times, though not for so large a sum. But Ogburn argues that the money was given to permit Oxford to pen plays and maintain acting companies. Why?

Perhaps because Elizabeth needed propaganda—mainly, the historical plays—to rally public support for the continuing contest with Spain, and her gifted relation was the man for the job. So was William of Stratford involved in the plot? The choice would have been natural: Oxford's crest as Viscount Bulbeck bore a lion brandishing a broken spear. The Elizabethan writer Gabriel Harvey once praised Oxford at court with a speech that said in part, "Thine eyes flash fire. Thy countenance shakes spears." At any rate, one account, written long afterward, suggests that Shakespeare used to spend money "at the rate of £1,000 a year." Where did this astonishing sum come from? Did Oxford transfer his stipend to the Stratford man? After Oxford died, his widow did bequeath regular payments to "my dombe man." That man, say Oxfordians, was the imposter and not the playwright.

Ogburn, now 76, served in World War II with Merrill's Marauders, an Army regiment operating behind Japanese lines in Burma. His 1959 account of that experience was made into a Hollywood film and launched a writing career. After the war, Ogburn joined the State Department. His father, Charlton sr., a New York attorney, and his mother, Dorothy, wrote a book on the Earl of Oxford, following the lead of a pro-Oxford English schoolmaster, unfortunately named J. Thomas Looney, who published *Shakespeare Identified* in 1920.

Stratfordians have had a good deal of fun with that name. Most of them, moreover, feel little compulsion to listen to alternatives. The works, after all, are what really matter. Besides, academic careers have been built on the premise that the Stratford man wrote the plays. There is a financial aspect, too, the thriving "Shakespeare industry." Thousands of tourists visit Stratford-upon-Avon each year, to gawk at William Shakespeare's tomb and troop through his house and peek into Anne Hathaway's cottage. They spend millions of dollars in the process.

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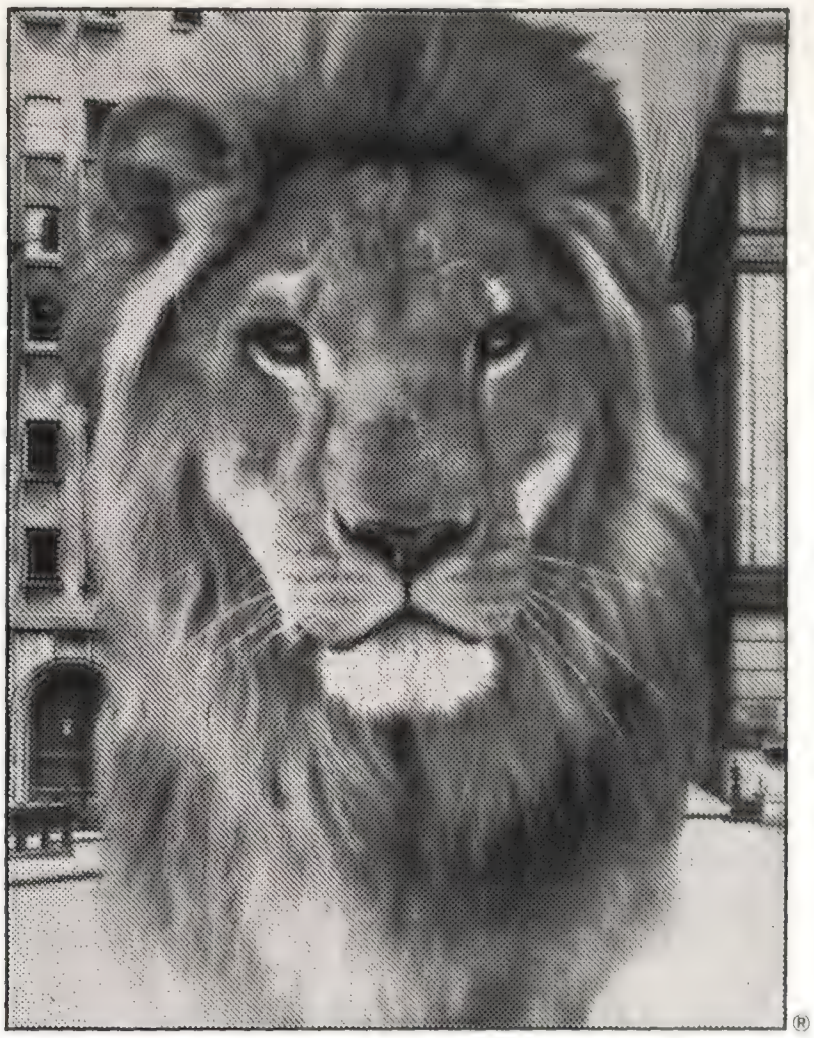

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of Shakespearean gadflies who, since 1856, have proposed 17 substitute Shakespeares, including Oxford, Sir Francis Bacon, Christopher Marlowe, the Earl of Derby, the Earl of Rutland, Sir Walter Raleigh and even Queen Elizabeth I herself. In *The Mysterious William Shakespeare*, Ogburn presents—and dismisses—the cases for the leading contenders. Francis Bacon (p. 174), the brilliant rationalist, he concludes, was simply too busy as a statesman and essayist. Besides, his literary style does not match. Christopher Marlowe comes closest to having the talent and the literary power but was stabbed to death in 1593.

Encouraged by Ralph Waldo Emerson, an American woman named Delia Bacon wrote a passionate book arguing that among others Sir Francis Bacon (no relation) and Sir Walter Raleigh, whose poetry was much admired by Elizabethans, collaborated on the works. The unfortunate woman fueled the prejudices of Stratfordians by once spending the night beside Shakespeare's tomb in Holy Trinity Church armed with a shovel. She later was committed to an institution.

The question still stirs hot controversy. After *Harvard Magazine*, the university's alumni publication, ran an essay by Ogburn (class of 1932) advancing Oxford's authorship, followed by a pungent rebuttal by professors Gwynne Evans and Harry Levin, the magazine received letters for nearly a year from cheering doubters and outraged traditionalists. English professor Walter Kaiser wondered if future articles might not assert that the "earth is flat" or that "Queen Victoria was a Peruvian transvestite." To the great delight of the Oxfordians, a moot-court debate about the authorship of the plays is to be held on September 25 by American University in Washington, D.C. It is being arranged by David Lloyd Kreeger, president of the Corcoran Gallery of Art. The cases for Shakespeare and Oxford will be argued by

Shakespeare's Falstaff robs travelers, which parallels an Oxford scrape.

two law professors before Supreme Court Associate Justices Harry Blackmun, William Brennan jr. and John Paul Stevens.

Thanks mostly to Ogburn's zeal and brilliance, the war between the two camps proceeds, sometimes in arguments both spurious and petty—ones that turn on interpretations of adverbs in hopelessly oblique Elizabethan texts and even on subjective views of Shakespeare portraits. The most famous likeness, an engraving by Flemish artist Martin Droeshout (p. 160) that adorns the First Folio, has to have been rendered from earlier sketches or from the memories of Shakespeare's contemporaries—for the artist was only 15 when Shakespeare died.

Much is made of a report printed in 1680, more than 60 years after Shakespeare's death, in which the English antiquarian John Aubrey, who visited Stratford, reported the outlines of the Shakespeare biography as we now know them. But, asks Ogburn, what kind of man was John Aubrey? According to his employer, the biographer Anthony Wood, the reporter was "a shiftless person, roving magotie-headed and sometimes little better than crazed";

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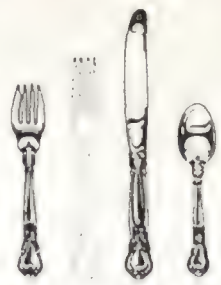

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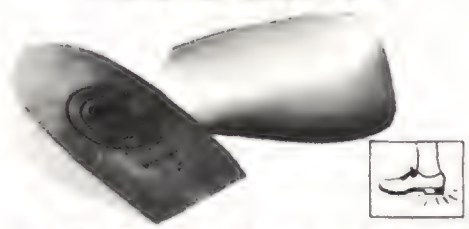

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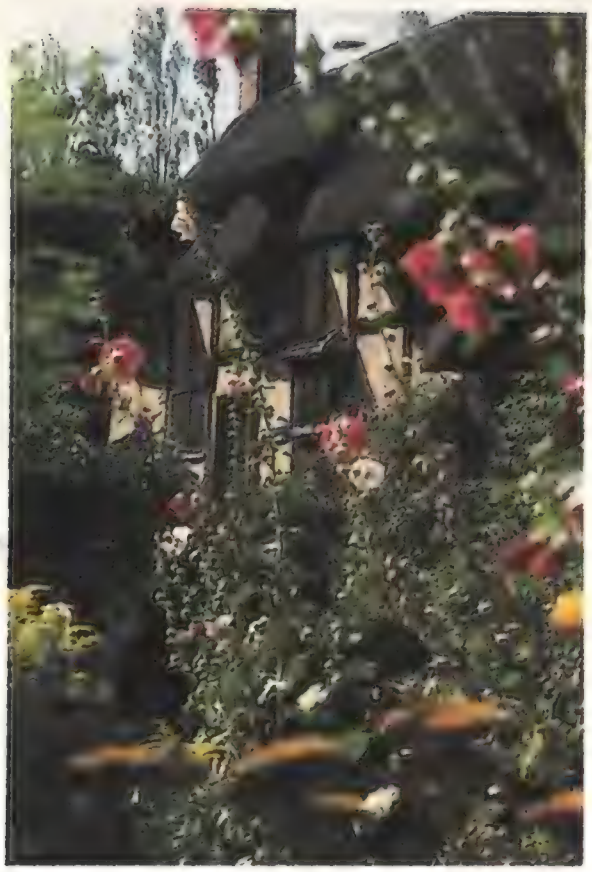
he "thought little, believed much and confused everything." Perhaps so, say Stratfordians, but Aubrey has proved correct in other matters and Wood relied on him and printed his findings. In addition, they point out that Aubrey's father was an actor contemporary with Shakespeare.

In more major matters, Ogburn points out that the name William Shakespeare was not alluded to in print until 1598 when author Francis Meres stated that Shakespeare was the best for comedy and tragedy. Ogburn believes that after seven of the plays had already been printed with no name, Meres may have been in on the pseudonym trick and chosen to launch the idea that they were by Shakespeare, Oxford's pen name. Stratfordians respond with a number of examples of Shakespeare's recognition. He willed "memorial rings," tokens of affection in Elizabethan times, to "my fellowes," actors John Hemming, Henry Condell and Richard Burbage. Hemming and Condell signed the First Folio seven years later, writing in the dedicatory address that it was to keep alive the

Immensely learned Sir Francis Bacon was once touted as author of plays.



Tourists love cottage of Anne Hathaway, who had to marry Shakespeare in 1582.

memory of "so worthy a friend." As for the fact that Shakespeare does not mention his works in his will, it was common for an acting company to own the dramas that it produced. Shakespeare, like other playwrights of the time, had no plays to leave to his heirs.

Stratfordians insist that the conspiracy of silence about the authorship, on which the Oxford case rests, would have been impossible to maintain, both at the time and especially during the scrutiny the records have received by researchers of the following centuries. Ogburn, in his rockiest defense, points to Ultra Top Secret (the term used for all the decoded messages from the top German and Japanese commands), which was the Allies' greatest secret in World War II. "Hundreds of people knew about Ultra," writes Ogburn, "but not a word about it was spoken in public for 30 years." One secret concerned an issue of victory or defeat in a global war; the other merely involved the identity of a playwright who became world famous only after his death.

In their *Harvard Magazine* rebut-

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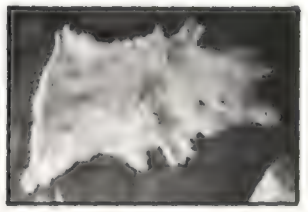

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tal of Ogburn, Professors Evans and Levin, as most people concerned with creative writing would, objected to the purely biographical and autobiographical analysis of imaginative literature. The anti-Stratfordian errs, they wrote, when he assumes "that Shakespeare's plays, most of them based on preexisting narratives and adapted to the conventions of the theatrical medium, can be treated as chapters of an autobiography."

Whatever its merit, or lack of it, with its centuries of debate, scholarship, sublimation and conjecture, the Shakespeare war is not likely to abate in the foreseeable future. Who was Shakespeare? There comes a point when one tends to answer, with Ian McKellen, Shakespeare or a man calling himself Shakespeare. Ogburn has given the Stratfordian ivory tower a mighty shake, but does not topple it. There is not convincing evidence that the Stratford man *didn't* write the plays, but if he didn't, Ogburn makes it clear, the likeliest other author was Oxford. And then there is that fellow named Puck who said "Lord, what fools these mortals be."

Scion of de Vere, Lord Vere of Hanworth, 22, is the current president of the Oxfordian faction in England.

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Book reviews

The Paris Edition: The Autobiography of Waverley Root, 1927-1934
Edited by Samuel Abt
North Point Press, $16.95

A native of New England and a graduate of Tufts, the young Waverley Root sailed for Paris in 1927 on board a ship called the S.S. *President Harding*. He intended to stay only a few weeks, but those weeks passed into months and the months into years, and he did not leave Europe until the German invasion of France forced him out in World War II. Root was back again soon after the war and lived in his beloved Paris until his death in 1982 at the age of 79. By then, he was famous as the author of several books on the history of cooking, most particularly his legendary *The Food of France*, published in 1958.

The Paris Edition is an autobiographical account of Root's time as an editor and writer in the late 1920s and early '30s on the Paris *Chicago Tribune*, always called simply the Paris Edition. It is a book of immense wit and charm that will be treasured by readers drawn to those near-mythical years in the loveliest of the world's cities. The Paris Edition was a keen rival of the long-established *Paris Herald* (European edition of the *New York Herald Tribune*; it swallowed the Paris Edition in 1934 and eventually became the *International Herald Tribune*), which has generally gotten a much better press than the Paris Edition. Root's volume helps establish that the Paris Edition was indeed the better and more colorful paper, and infinitely more aware of what was happening among the city's writers and artists.

Its staff members included James Thurber, Floyd Gibbons, William L.

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Shirer, Elliot Paul (author of *The Last Time I Saw Paris)*, as well as Eugene Jolas and Robert Sage, who with Paul edited the seminal avant-garde magazine *transition*. World-famous *Chicago Tribune* correspondents such as Vincent Sheehan, Edgar Snow and Edmond Taylor were frequently in the office. Even the proofreading room was loaded with talent. Henry Miller worked there, as well as his literary sidekick Alfred Perlès. So did Wambly Bald, author of a best-selling book called *La Vie de Bohème* that helped create the Paris myth among Americans.

The Paris Edition has been expertly culled from a series of articles that Root wrote for the *International Herald Tribune* just before his death. Root's editor, Samuel Abt, a *Herald Tribune* staff member, deserves full marks for a brilliant job of smoothly melding the articles into a book. His accomplishment is all the more commendable because Root, in his writing years, was, as Abt well knows, notoriously difficult to handle.

Be that as it may, the Root who narrates this book is an admirable character and the best kind of journalist—wry yet open-minded, objective and fair in his judgments, with a soft spot for human oddity and a love for a funny story. One of his best concerns a classic drunken reporter named Spencer Bull, hired by the Paris Edition after being canned by the *Paris Herald* for filing a concocted interview with the President of France.

Assigned to cover the Prince of Wales on a French visit, Bull passed the time boozing in a café and then picked up the mimeographed press release at the end of the day's activities. Noting that the Prince had reviewed a Boy Scout

Root recalled that *Tribune* "was a club ...we loved putting out the paper."

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troop, Bull reported that in response to snippy words from a Scout, the Prince "snatched a riding crop from his equerry's hand and beat the boy's brains out." The story passed through a half-dozen drunken editors and appeared on page one with the headline PRINCE OF WALES BASHES BOY'S BRAINS OUT WITH BLUDGEON. The *Chicago Tribune* was banned from Britain for six months.

Amid the delightful tales of newspaper escapades and Paris bohemia, there is unfortunately very little about food, the subject that was to make Root's name. There is, however, a chapter devoted to a raffish bistro called Gillotte's, directly across the street from the Paris Edition office, where the American clients had dark suspicions they were being served horsemeat rather than the advertised beef and where, each time rabbit stew appeared on the menu, there were loud inquiries about the bistro cat Mimette's latest kittens.

It was a chapter that touched me deeply, not only for its evocation of a lost Paris, but because 35 years later, I ate in the same bistro several nights a week. During the 1960s, the *New York Times*—like the *Chicago Tribune* before it—tried unsuccessfully to establish a rival paper to the *Paris Herald Tribune*. I was an editor on the Paris *Times*, which was located in the very same printing plant where Waverley Root had had his office. And frequently, we took our meals in Gillotte's. By then it had changed hands (years before, Madame Charlotte, the fat cook, had run away with Raymond, the waiter, about 50 years her junior) and was called Chez Paul. We referred to it as the "Quick and Dirty" because it stood in stark contrast to a new place next door that we had dubbed the "Clean Well-Lighted."

Just as in Root's day, we liked the bistro because the prices were cheap and the service fast, and we were equally convinced that the beef was horsemeat. How persistent are the petty fears of Americans in Paris, as long-lasting as our outlandish love of the place. Alas, there was no bistro cat at the Quick and Dirty to make jokes about, and White Russian cabbies no longer crowded the bar as in Root's day. His chapter on Gillotte's is a minimasterpiece and will be read for generations, continuing to inspire a lust in young Americans to become part of Paris.

Charles Monaghan
Writer on food and publishing

Ringing the Children In: Texas Country Schools
Thad Sitton and Milam C. Rowold
Texas A&M University Press, $16.95

The hardships that Texas farm children had to endure to get a grammar school education as recently as 40 or 50 years ago seem appalling by today's standards. They normally walked several miles to a one-room, multigrade "common" school. If a creek lay between their home and the school, they waded it or crossed on makeshift bridges built by their fathers. Sometimes the mud was so deep that the smaller kids, unable to "pull the mud" as Texans say, had to stay home. The small schoolhouses usually were drafty structures little better than sheds, heated by potbellied stoves and devoid of either electricity or plumbing. The children often sat on benches. A teacher who earned $100 a month was lucky.

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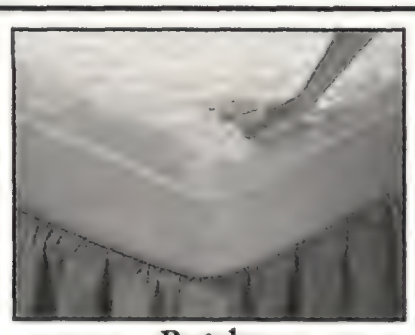

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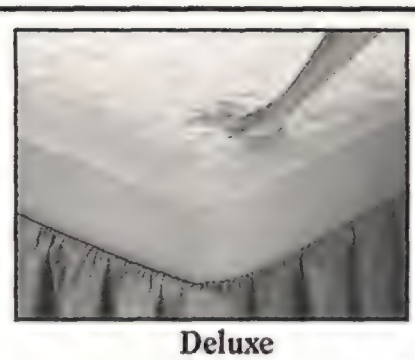

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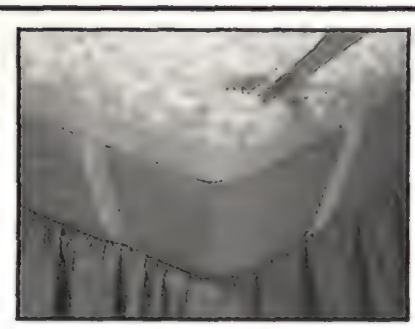

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this book by oral historian Thad Sitton and educator Milam Rowold is that the reform wave that eliminated these schools after World War II did not produce better-educated children. "Progress" in the form of consolidated, larger and more bureaucratic schools meant a loss of individualized and thus, despite the primitive conditions, more effective teaching. The writers summon statistics to show that the barefoot and overalled youngsters, whose school year lasted fewer than six months, actually learned more and performed better than their grandchildren who attend glass-walled schools filled with computer rooms and guidance counselors.

What the oldfangled schools had was the personal touch, a one-on-one teacher-pupil relationship that was inevitably lost in expansion and consolidation. Classes were smaller. A teacher who taught the same youngsters year after year became practically one of the family and felt responsible for a child's progress. The older kids in a one-room school helped teach the younger ones and assisted the teacher in disciplining them. Conversely, the brighter children in lower grades benefited by listening to the lessons aimed at their big brothers and sisters, learning from the spillover.

Equally important, the authors argue, was the fact that rural schools enjoyed the unquestioned support of the families in their district. The school was often the only institution that united a 20-mile-square patch of range or blackland farms, and when the school closed, the community disintegrated.

Hardscrabble Texas farm families did much more than just send their kids off to school with a lunch pail. They often built the schools themselves; they ferried the children on wagons and trucks in foul weather, welcomed the teacher into their homes and steadfastly backed the teacher on discipline issues. Rural Texans believed in public education with the poignant ardor of people who still regarded it as a privilege.

Though the authors of *Ringing the Children In* have a point to make, the real meat of their book is the oral history. Reminiscences drawn from hundreds of interviews are raw material for historians, an evocation of grass-roots life in Texas between about 1890 and 1945. The book has the plain, straightforward manner of the people who fill it and something of their dry, squint-eyed humor. A favorite story about a hypothetical former student sums up the feelings of many for those schools of short sessions and dedicated teachers. "When I was promoted from the third to the fourth grade it made me so nervous I could hardly shave," he's reported to have said.

Teachers in Texas common schools made do with what they had. Nature was never far from their classrooms; when a wren built a nest in one schoolhouse it became a nature-study project. "We sat for an hour," a former student recalled, "watching that silly little wren trying to get a straw that long through a hole this big." Trespassing snakes would sometimes slither over children's feet. At recesses the kids would ride a "flying jenny"—a board or split log spliced onto a stump so that it could be spun in a circle—or play "Annie over," "wolf-over-the-river" or "blindman's buff." And few schools had any sports equipment; students made their own bats and balls (a stone with the yarn from a raveled sock

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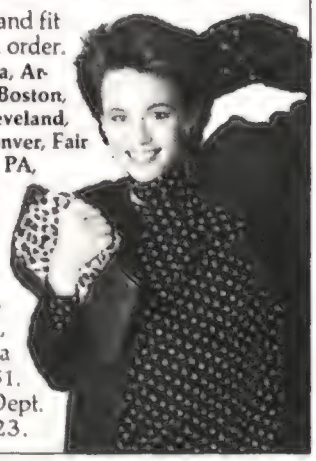

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wound and sewn around it). At one school the kids raised the $15 needed for basketball equipment by collecting 1,800 rats' tails to win a contest inspired by an infestation of rats and mice.

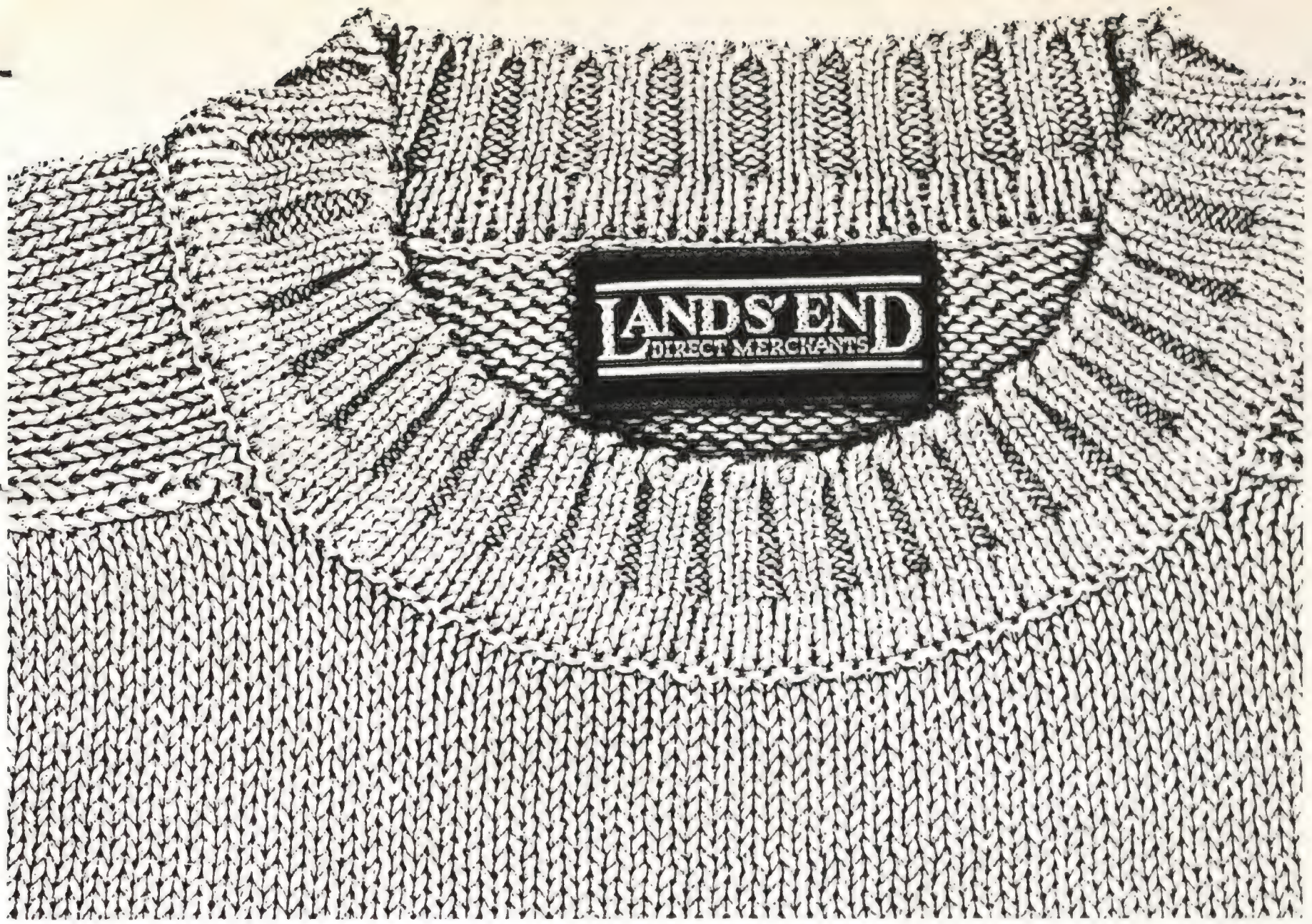
Most schoolmarms and their male counterparts come off as dedicated, dogged and imaginative in the face of deprivation and adversity. The children of two and three generations ago were, of course, innocent by today's standards, but they were also independent, determined and nature-savvy. Students at one Texas school found a hornets' nest on the way to school one winter day, plugged its entrance with a piece of ice and hid it in the classroom. When the teacher fired up the wood stove, the ice melted, the hornets escaped and school was over for the day.
Donald Dale Jackson
Critic and writer about nature

Fight the Wild Island: A Solo Walk Across Iceland
Ted Edwards
Salem House, $18.95

Last summer I spent some time in Iceland. Reykjavik's smart shops and restaurants are surprising enough, but nothing compares with the dramatic surprises of the island's landscape: mountains of treeless rock, jagged plains of stratified lava, massive white glaciers, awesome waterfalls, steaming volcanoes, bottomless cracks in the earth, and the occasional welcoming green valley. The country dazzles and those bone-jarring miles on gravel and cinder roads can pay off, as mine did, with more rainbows than I normally see in a year. One decorated the mighty waterfall, Gullfoss, and another arched brilliantly across a plain of featureless, lifeless, black volcanic ash. This is four-wheel-drive country, its settlements small and sparse, where the distant sight of a white concrete farmhouse gives a sudden thrill.

An Englishman named Ted Edwards *walked* across Iceland in the summer of 1984, and he tells the story of his trek—alone, covering 510 miles in 24 days—in *Fight the Wild Island.*

Edwards is a veteran walker, having previously spent 19 days crossing 350 miles of the Western Sahara by himself. And he is an amateur, in both the good and bad senses of the word. Only an amateur would ruin movie film and break his still camera as Edwards did in Iceland. Only an amateur would give the wrong population for the country.



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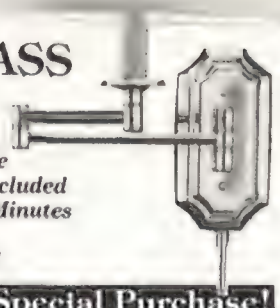

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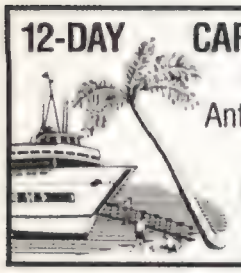

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Only an amateur would push himself too hard, travel too far, stay too long, or attempt a solo climb of an Icelandic glacier with no previous experience of crampons or ice ax. But then perhaps only an amateur would have attempted this adventure at all. "If I had been sensible," Edwards writes engagingly, "I would have gone to Blackpool."

He is an engaging fellow, a drama teacher by profession, good-humored, curious, cautious about daunting obstacles but sometimes uninformed and careless. His book has odd gaps (his prior research apparently was limited to topographical maps) and arbitrary parameters (he had to complete his journey, for example, in time to catch his discount-fare flight back to Britain), but the result is a tale that goes far beyond the limits of the average tourist and yet falls comfortably short of the slick derring-do of professional travelers.

Edwards started his trip in the eastern coastal town of Seydisfjördur, tramping across moors and then an area of "black slag with great volcanic slag-heaps stark against the sky." The ground here is "black, damp, cloying waste mixed with sharp grit forever devoid of life." But worse terrain lies ahead: expanses of ancient lava, a trackless desert of black sand, fast-moving glacial rivers to be crossed, sheer cliffs to be climbed, all of it beneath quickly changing weather.

Some of his difficulties could have been avoided by bringing dry food instead of food that required hot water in a land with no wood to burn. But other difficulties are unavoidable. Few travelers, in Edwards' place, could have resisted the challenge of climbing a glacier or, later, exchanging cold for heat by climbing a volcano, Mount Hekla, still steaming from its 1981 eruption. Here, and when he sees geysers and the wonderful waterfall, Gullfoss, Edwards' descriptions are breathlessly vivid and appropriately awestruck.

One could wish that Edwards' curiosity extended to the 242,000 Icelanders who have made a proud country from this beautiful but inhospitable landscape. But perhaps the revelation of the island's scenery and the personal victory of conquering it are enough. Every journey, Edwards writes, is a "small, separate life; remote from normal existence and an entity of itself." His book describes an especially good one.

Alan Ryan
New York travel writer and novelist

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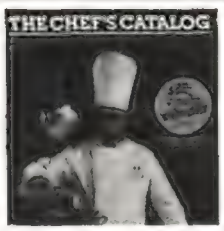

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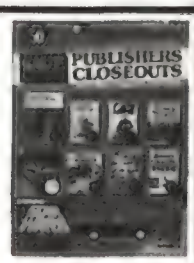

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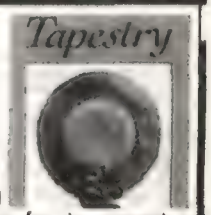

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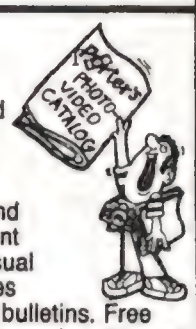

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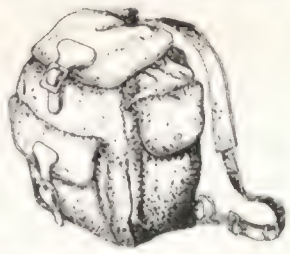

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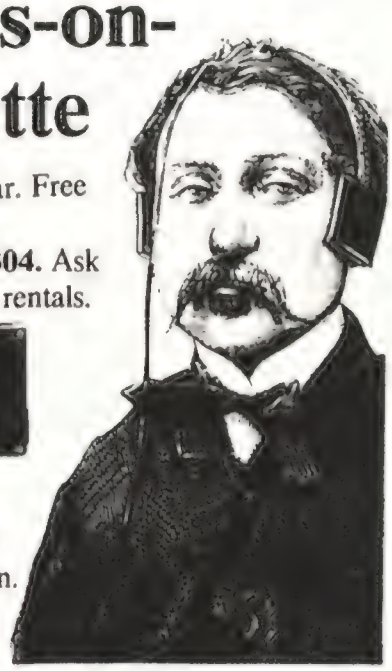

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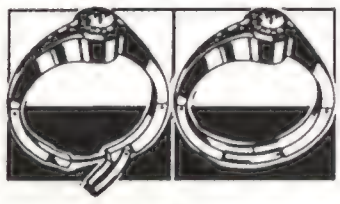

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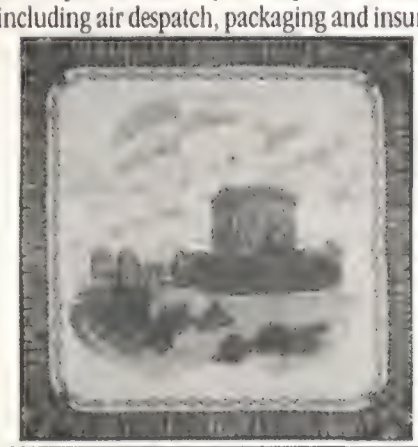

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Smithsonian highlights

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After Labor Day, museums resume regular hours, 10 A.M. to 5:30 P.M.

Special September exhibits and events

National Museum of American Art
American Traditions in Watercolor: The Worcester Art Museum Collection (September 17-November 22) See *Highlights continued.*
John La Farge (through October 12) Paintings, graphics and stained glass by the versatile 19th-century master.

Arthur M. Sackler Gallery (see page 44)
In Praise of Ancestors (September 28) Extensive collection including bronzes, jades.
Monsters, Myths and Minerals (September 28) Animal imagery in 126 pieces.
Pavilions and Immortal Mountains: Chinese Decorative Art and Painting (September 28-August 1988) Furniture, paintings and precious objects reflecting the tastes of an elite segment of Chinese society.
Nomads and Nobility: Art of the Ancient Near East (September 28-September 1988) Works utilitarian and refined from Iran, Anatolia and the Caucasus.
Persian and Indian Paintings: Selections from a Recent Acquisition (September 28-February 1988) Fifteen masterpieces.
Temple Sculptures of South and Southeast Asia (September 28) Sculptures spanning more than 1,000 years.

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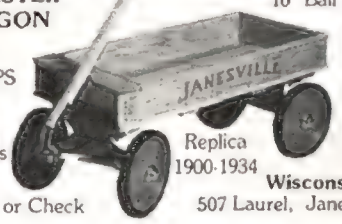

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Chinese Buddhist and Daoist Imagery (September 28) Sixteen sculptures in stone and bronze.

National Museum of African Art (see page 44)
African Art in the Cycle of Life (September 28-March 20) Ninety-two works of sub-Saharan art from public and private collections.
Permanent Collection (September 28) One hundred masterworks.
Objects of Use (September 28-May 2) Exquisitely crafted utilitarian objects.
Patterns of Life: West African Strip-Weaving Traditions (September 28-February 29) A rich selection of textiles.
Royal Benin Art in the Collection of the National Museum of African Art (September 28) Traditional court art produced during 500 years.

National Museum of American History
Official Images: New Deal Photography (through January 1988) A chronicle of FDR's America.
The Year in Pictures (September 16-January 1988) Documenting events on or near the National Mall.

Hirshhorn Museum & Sculpture Garden
Lucian Freud (September 15-November 29) Eighty paintings in a major retrospective by the British realist.
Roger Brown (through October 18) Evocative canvases by the Chicago Imagist.
Arnold Newman Photographs Artists (through September 27) Portraits spanning 1940 to 1961.

National Portrait Gallery
Recent Acquisitions (through February 14) Paintings, sculptures, prints and photographs.
Portraits from the American Academy and Institute of Arts and Letters (through September 20) Paintings by William Merritt Chase, Augustus Saint-Gaudens, others.

Cooper-Hewitt Museum (New York)
Art Nouveau Bing: Paris Style 1900 (through October 11) Prints, posters, decorative objects and furniture.
Safe and Secure: Keys and Locks (through October 18) Spanning 2,000 years.
Underground Images: The School of Visual Arts Subway Posters, 1947-1987 (through November 8) Posters created by renowned contemporary designers.

National Museum of Natural History
On China: Photographs by Hiroji Kubota (September 11-November 13) One hun-

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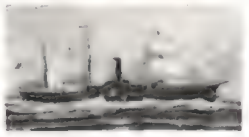

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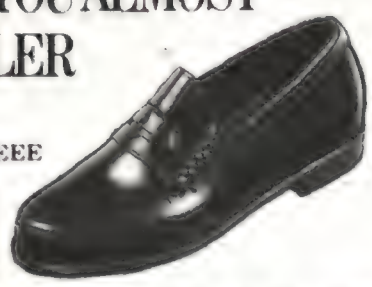

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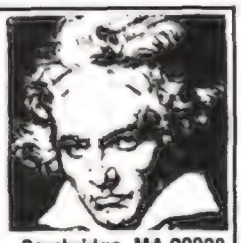

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National Air and Space Museum
Into the Sunlit Splendor (through December 31) Forty paintings by aviation artist William S. Phillips.
America's Space Truck (indefinite) The U.S. space shuttle in photographs, video displays.

Renwick Gallery
Dan Dailey: Glass, 1972-1987 (through October 25) Vases, sculptures, drawings.

Exhibition catalogs

Catalogs available at this time include:
Official Images: New Deal Photography (paper, $14.95)
Lucian Freud: Paintings (paper, $21.95; cloth, $40)
American Traditions in Watercolor: The Worcester Art Museum Collection (paper, $24.95; cloth, $35)
Into the Sunlit Splendor: The Aviation Art of William S. Phillips (paper, $5)

To order, send check or money order to Museum Shops, Box 44083, Washington, D.C. 20026-0083. Include 15 percent of total purchase to cover postage and handling (minimum, $1.75).

Lecture and Seminar Program

A special series will be held in Greenwich, Connecticut, September 26-30. Honoring the 75th anniversary of the Bruce Museum, the program will feature lectures on marine biology, American art and anthropology as well as seminars on photography and garden planning presented by Smithsonian curators. For further information, write to the Lecture and Seminar Program, 1100 Jefferson Drive, S.W., Washington, D.C. 20560 or call (202) 357-1350.

Smithsonian on the air

Radio Smithsonian: Features on this weekly series include a profile of the Woodrow Wilson International Center for Scholars, a story on the changing images of dinosaurs, and an exhibition on the controversial relocation of Japanese-Americans during World War II.
Here at the Smithsonian: Three-minute TV features present sights, sounds and behind-the-scenes activities.

To find out what stations in your area carry these programs, write Office of Telecommunications, MAH Room BB40, Washington, D.C. 20560.

Resident Associate Program

To become a Resident Associate, or for fee and ticket information, call 357-3030. Here are some September events:
Contemporary Chinese Cinema (September 22, 30 and October 7,14,21; 8 P.M.) Five recent films from the People's Republic of China.
Tiffany's Double Diamond Jubilee (September 21; 8 P.M.) Illustrated lecture and book-signing session by design director John Loring in celebration of the legendary emporium's 150th anniversary.
An Evening with Gene Siskel and Roger Brown (September 9; 8 P.M.) Painter Brown, critic Siskel discuss the artist's retrospective show at the Hirshhorn.
Say It With Music (September 26; 7:30 P.M.) Rita Gardner, star of the Fantasticks, in a cabaret revue featuring songs from the Roaring '20s.
A Festival of Czechoslovakian Cinema (September 8, 15, 22, 29; 7 P.M.) A rare opportunity to view the works of contemporary filmmakers.
African Art and Ritual in the New World (September 15; 8 P.M.) Illustrated lecture by scholar Mikelle Omari.

Smithsonian Institution Traveling Exhibition Service

SITES circulates exhibitions to hundreds of cities outside the Washington area. To sponsor one of the shows in your community, write SITES, Smithsonian, Washington, D.C. 20560. Here are some September exhibits:
Albany, New York (September 5-November 8) *Diamonds Are Forever: Artists and Writers on Baseball*, New York State Museum.
Charlotte, North Carolina (September 12-October 25) *Dutch Paintings of the Golden Age from the National Gallery of Ireland*, Mint Museum of Art.
Des Moines (September 5-October 4) *Know What You See: The Examination and Treatment of Paintings*, Polk County Heritage Gallery.
El Paso (September 5-October 11) *Italy: One Hundred Years of Photography*, El Paso Museum of Art.
Pekin, Illinois (September 19-October 18) *The Long Road Up the Hill: Blacks in the United States Congress, 1870-1983*, Dirksen Congressional Center.

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The watercolors from Worcester

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"I have great difficulty in making people understand why 'such things' bring 'such prices' " wrote a discomfited museum director in 1910. Philip Gentner was talking about watercolors—often perceived in his day as little more than rough, unfinished studies. At a time when many a curator had an eye only for oils, Gentner was bent on acquiring watercolors for the Worcester Museum in Massachusetts.

His quest for their ephemeral beauties took him to Prout's Neck, Maine, where he pored over sheaves of exquisite creations in Winslow Homer's studio. Eventually, Gentner persuaded a somewhat reluctant museum board to purchase 12 of the paintings, paying what seemed the princely sum of $500 to $600 for each work.

Gentner's perspicacity, of course, was well rewarded. His Homers now form the nucleus of an enviable collection. A new exhibit, "American Traditions in Watercolor," at the Museum of American Art, places many of Worcester's treasures on view for the first time. Represented are masters of the medium from Winslow Homer to Andrew Wyeth.

Two turn-of-the-century painters lie at the heart of the show. Homer's studies of subjects as various as North Sea fisherwomen and Bahamian landscapes, and John Singer Sargent's Florida alligators and Venetian quays reveal two sublime practitioners of the art, in locations from the homely to the exotic.

Ravishing though their works may be, these creations constitute only an alluring portion of Worcester's riches. Later 20th-century artists, some turning to industrial and urban subjects, and an emerging generation of watercolorists offer compelling variations on the tradition.

The show, running September 17 to November 22, travels to Minneapolis.
Kathleen M. Burke

Lyonel Feininger's *The River*, 1940, draws on youthful memories of Hudson, East rivers to create a luminous and angular seascape.

Last Red Tulips, which was painted in 1984, is based on a photograph of artist Carolyn Brady's garden in Baltimore.

Rockwell Kent's bold *Woman Reaping*, 1926, depicts harvest scene in Ireland with characteristic grace and monumentality.

Rum Cay, painted in winter of 1898-99, evokes Winslow Homer's captivation with sunny islands of the Bahamas.

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Domestic Study Tours

Philadelphia October 1-4: Lectures and tours focus on 18th-century Philadelphia and the making of the U.S. Constitution.

California Wine October 3-9: Learn about wines for all occasions. Visit wineries in Napa, Sonoma and Mendocino with experts.

California Delta Cruise October 9-12: Cruise in the wake of the Gold Rush stern-wheelers. Start from San Francisco to discover the Sacramento and San Joaquin rivers, rich in history and legend.

New York Architecture—From Cast-Iron to Post-Modern October 22-25: Enjoy a weekend of walking tours, a private cruise around Manhattan and Broadway's *Les Misérables.*

Florida Keys October 24-30: Return to camp as an adult at Seacamp on Big Pine Key; discover mangroves, tidepools and colorful coral reefs with marine experts.

National Air and Space Weekend November 6-8: Explore air and space travel with curators and special guest astronaut. Program features private tours of the museum and its restoration-and-storage facility.

Christmas at the Smithsonian December 4-6: Welcome the holidays with tours, music and festive dining. Visit the new Museum of African Art, Haupt Garden and Sackler Gallery.

Everglades December 5-12: For the novice or expert, canoe and camp among Florida's Ten Thousand Islands.

Christmas in Santa Fe December 20-27: Experience the festive traditions of the Spanish and Indian cultures of the Southwest.

Florida Springs February 6-10: Canoe the freshwater springs of central Florida and see the endangered West Indian manatee.

Hawaii February 6-18 or February 20-March 3: Experience undersea wonders, great volcanoes, lush forests and whale watching.

Baja Whale Watch February 22-March 1 or March 1-9: Discover the beauty of Baja California in company of gentle gray whales.

Death Valley March 12-20 or April 10-18: From your base at Stovepipe Wells Motel, explore this fascinating area. Visit Scotty's Castle, photograph desert flowers and hike to scenic overlooks including Dante's View and Zabriskie Point.

Washington "Anytime" Weekend Discover your capital city in Smithsonian style. Visit the new Quadrangle building complex—containing the Museum of African Art and Sackler Gallery—to open September 28 (see page 44). Reserve with VISA or MasterCard now.

Foreign Study Tours

People's Republic of China Follow the Silk Road, climb sacred peaks, cruise the Yangtze, travel by train, study decoration and antiques or visit Tibet. Tours for new and repeat China travelers.

Oxford Smithsonian Seminar September 11-26: Be an Oxford scholar. Attend classes and field trips.

Scandinavian Design: Past and Present September 20-October 4: Enjoy a wealth of artistic expression. See museums, galleries, design ateliers, artists' studios.

Irish Walk September 24-October 6: Stay in castles and take day hikes through the Ring of Kerry and Connemara.

In Pursuit of Brazil October 6-23: An enormous land of contrasts and exuberance to fascinate you. Includes Rio de Janeiro, Brasilia and Iguaçu Falls.

Highlights of Austrian Civilization October 10-25: Live in a baroque palace in Salzburg and a charming hotel in Vienna while studying music, art and history.

Japan Journey October 11-24: An excellent introduction to Japanese culture in Kyoto, Tokyo and the countryside.

Australia-New Zealand October 11-November 3: An intriguing exploration of natural history and culture down under.

Christmas in Europe Celebrate with fellow Associates in one of four idyllic settings: Munich and Rothenburg; Salzburg and Vienna; Canterbury; or Winchester.

Christmas in Fiji December 17-29: Enjoy the holidays in a South Sea island setting. Reside at the intimate Namale Plantation overlooking the Pacific.

Backstage London January 1-10: In Europe's theater capital, attend traditional and avant-garde productions, meet performers backstage.

South America Voyage January 7-31: Cruise from Brazil through the Strait of Magellan and Beagle Channel to Santiago, Chile. Fly to Iguaçu Falls.

Thailand and Burma January 9-29: In Asia's most exotic countries, explore coiorful cities, remote villages and archaeological sites.

Performing Arts of Russia January 10-24: Enjoy the best of Russian ballet, opera, symphony, folk dance and theater.

Siberian Winter Odyssey January 24-February 6: A thrilling winter exploration awaits you—dash through majestic countryside in a troika, ride the Trans-Siberian Express, visit Moscow and Leningrad.

Mesoamerican Study Programs January and February: Choose from three itineraries—Yucatán Adventure, Zapotec and Maya Mexico, Guatemala Adventure. Explore archaeological treasures, natural beauty.

India Wildlife Safari January 22-February 17: Travel by elephant and jeep to observe rare species of birds and animals in India and southern Nepal.

Tanzania-Kenya Wildlife Safari January 25-February 14: A unique wildlife excursion featuring the best of East Africa.

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Smithsonian Seminars

Join your fellow Associates for a week of discovery and excitement at Smithsonian's two new museums on the Mall, the Arthur M. Sackler Gallery and the National Museum of African Art. Each seminar offers you the unique opportunity to journey behind the scenes at these dramatic underground museums (see page 44). You'll enjoy world-famous collections in the company of eminent experts and learn about conservation, collection management and research.

Splendors of Asian and Near Eastern Art
January 10-15

Trace the history of Asian and Near Eastern art with scholars from the Sackler and Freer galleries. You'll see masterworks in bronze, jade, silver, lacquer and ceramics, as well as painting and sculpture. Participate in lectures and tours that feature Chinese bronzes during the ancient Shang and Zhou dynasties, Chinese decorative art and painting from the 10th century A.D. to the 1950s, ancient Near Eastern metalwork and ceramics, and contemporary Japanese art. Other sessions will highlight special exhibitions of Persian and Indian paintings and manuscripts. Beyond the Smithsonian, you'll visit private and public collections of Indian and Tibetan art.

African Art at the Smithsonian
January 10-15

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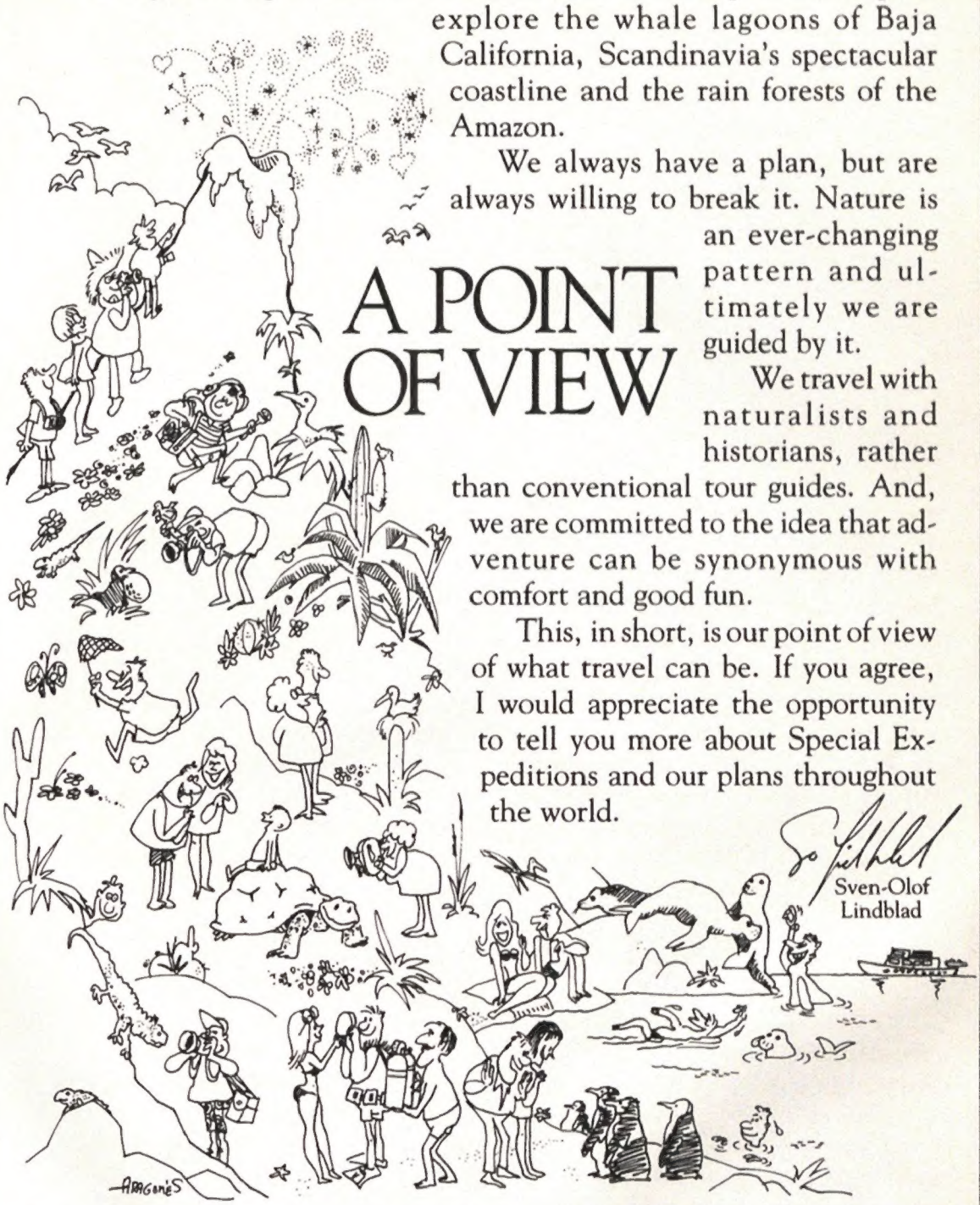

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By Judy Harkison

'A chorus of groans,' notes Sherlock Holmes

"I read nothing except the criminal news and the agony column," Sherlock Holmes declared in 1886. "The latter is always instructive."

The agony column, or "personals" as we call them here, were for years a front-page feature of the *Times* of London, tantalizing its readers with daily snippets suggesting crime, romance, intrigue and, naturally, sheer British dottiness. As in the following request: "Tutor with Scottish accent urgently required for intelligent parrot."

Agatha Christie frequently wove a personal into the plot of her mysteries. Miss Marple's adventure in *A Murder is Announced* began as a public notice of the exact time and location at which a killing would take place. In *Third Girl*, Hercule Poirot speculates about the mystery behind this message: "In desperate trouble. Must see you. Come to flat 4:30 without fail. Our code Goliath." Codes and ciphers, you see, were part of the mystique. One personal in 1864 ran as follows: "L'ABBANDONATA.—Bmfybo esb Spdigpsu sfqpsufe efbe . . . Mea Culpa! WRITE.—G.G." (A curious reader might break the code by starting the alphabet at *B* rather than *A*.)

In America today, personals are mostly about dates and mates and run heavily to abbreviations. Everybody is familiar with ISO (in search of), SWM (single white male) and DWF (divorced white female) as well as the adjective "caring," which all the world seems to be looking for in a "relationship." But on both sides of the Atlantic a century ago, before the arrival of the telephone (as yet untapped and totally private), newspaper personals offered far richer revelations. Like this one that police thought might presage a burglary: "Billy, crack nuts tonight at 12 o'clock — street."

Some messages were desperate: "LULU FOR GOD'S SAKE COME HOME. BOY dying with measles. C." Some, tantalizingly enigmatic: "Green Eyes. Come!" Not to mention the punchy but more cryptic: "Wrong.—Right. Write."

In 1870 the course of true love did not run smooth for Frank and Laura of Baltimore, at least in the pages of the *Sun*. "Laura. Business Prevented. Will be there Monday without fail. Answer. Frank." "Frank, I will be there. Laura." "Laura. I was there. Will be again on Saturday. Frank." On Saturday a final message appeared: "Frank, 'Tis Laura's request you should wear one of SNOW'S WHITE SILK HATS."

Clearly the girl in question had to be careful about answering an ad like this: "Third avenue car, going down town yesterday morning. The young lady in black, who answered the bow of the gentleman opposite . . . will confer a great favor by addressing 'B.,' Box 1300." Yet another London ad, circa 1919, sounds like the start of a Jane Fonda versus Robert Redford *tête-à-tête*: "If the flapper whose arithmetic or eyesight was so defective that she was unable to distinguish between room 169 and 196 will communicate with Box H888, she will have the opportunity of apologising to the astonished officer in the blue pajamas."

Hope springs eternal, of course. I recently came on the following personal by a magazine ISO in Washington, D.C.: "ROMANCE ON THE DULLES TOLL ROAD? On Dec. 20th you looked out of your black Toyota, smiled, slipped off your Reflectos and waved at a guy in a 450SL—me. I wish now I had taken your exit."

In earlier times Washington papers tended to carry ads from people in search of federal jobs. "$60 to anyone obtaining me a position under the Government either as a watchman or a messenger. Address O, this office." Another aspiring bureaucrat, referring to himself as the "only living Democrat not holding a Government job," had a little fun with the political spoils system. "While waiting for the City Postmastership," he noted, "will do the cheapest and best printing on earth."

Many a lad wanted to go West, with a partner, like the young man of 25 who "would truly appreciate the acquaintance of some young educated lady who is possessed with several thousand dollars." The view was "to matrimony" and "a new business in a Western city."

In Boston, the *Pilot* had a column used by Irish immigrants searching for friends, relatives and (often) runaway spouses. One woman advertised for the return of a man "who left me and spent 230 dollars without any reason. He is 5½ feet high, fair hair, cross-eyed and . . . got blown up in East Boston at the foundry." Two workers, boardinghouse mates of one Patrick Flynn, hoping to get their property back, told a sad story: "We being deficient of a trunk, and he having one—not mistrusting his honesty—we put some of our clothes and money in it for safety; he, on Monday morning disappeared, taking with him his trunk . . . ."

And so it went, through all the categories: inventors looking for capital, husbands renouncing debts of wives who have left their "bed and board," bankruptcies, assignations, name changes—as in this one, from the *Times* of 1862: "I, Norfolk Howard, heretofore known by the name of Joshua Bug, do hereby wholly abandon the surname Bug . . . to be called Norfolk Howard only."

Little wonder that Holmes and Watson could hardly have an adventure without the personals. "What a chorus of groans, cries and bleatings!" Holmes exclaims in *The Adventure of the Red Circle*. "What a rag-bag of singular happenings! But surely the most valuable hunting ground that ever was given to a student of the unusual."

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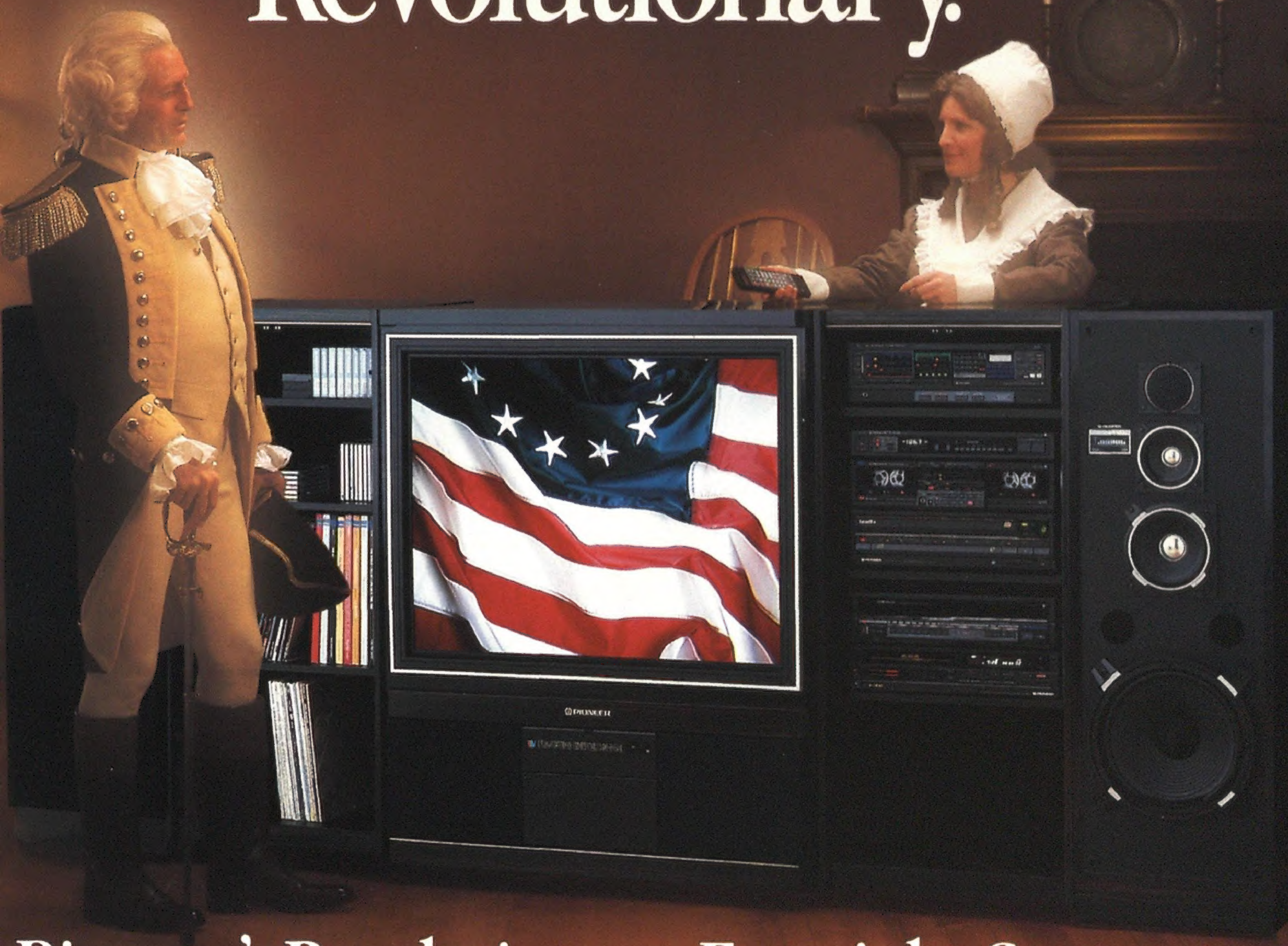

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